

SITE LOCATION



SITE VICINITY MAP

PROJECT DIRECTORY

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OWNER

RREEF AMERICA, L.L.C.

OWNER'S ARCHITECT
HILL PINCKERT ARCHITECTS, INC.

DEVELOPER

FREMONT ASSOCIATES

DEVELOPER'S

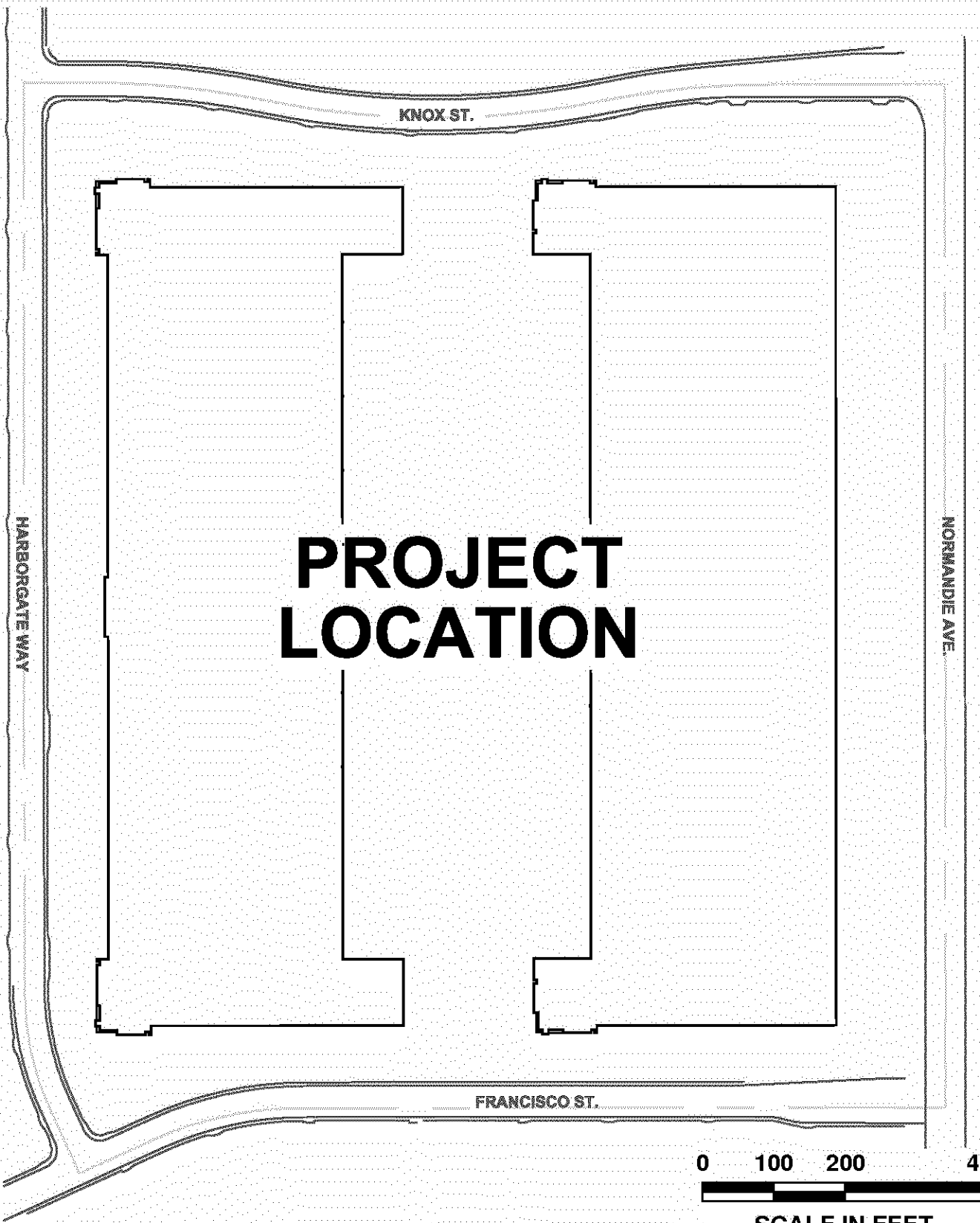
CONSTRUCTION MANAGER
F.A. CONSTRUCTION

DEVELOPER'S CONTRACTOR
OLTMANS CONSTRUCTION CO.

GEOTECHNICAL ENGINEER
NORCAL ENGINEERING

CIVIL ENGINEER
THIENES ENGINEERING

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
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0 100 200 400
SCALE IN FEET



PROJECT LOCATION MAP

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA
BUILDING 2

BIOREMEDIATION AMENDMENT AND
SOIL VAPOR EXTRACTION SYSTEM

PROJECT NO. 28882-301

6	12/8/03	AS-BUILT	GKM
5	6/20/03	APPROVED FOR CONSTRUCTION-REVISION 1	GKM
4	5/1/03	APPROVED FOR CONSTRUCTION	GKM
3	3/24/03	APPROVED FOR BID	GKM
2	3/19/03	DRAFT TO CLIENT	GKM
1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM
ISSUE	DATE	REVISIONS	BY



UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

COVER SHEET/DRAWING INDEX

Date: DECEMBER 2003 Scale: AS SHOWN File No. 28882D01

Project Engineer:	RMF
Designed By:	TAH
Drawn By:	GKM
Checked By:	TAH
Sheet No.:	1 of 10
Drawing No.	G-1
Issue	6

GENERAL NOTES

1.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REQUIREMENTS.
2.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND LOCATIONS SHOWN PRIOR TO COMMENCING WORK. ANY CONFLICTS WITH DETAILS AND NOTES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
3.
- DETAILS TAKE PRECEDENCE OVER GENERAL DRAWINGS. WHERE NOTES CONFLICT WITH ANY DRAWING, THE MOST RESTRICTIVE SHALL APPLY. WHERE CONFLICTS EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. NO CHANGES OR ADDITIONS TO THE SCOPE OF WORK DEPICTED HEREIN SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
4.
- CONTRACTOR SHALL OBTAIN ANY NECESSARY CONSTRUCTION PERMITS AND SCHEDULE ANY REQUIRED INSPECTIONS. THE CONTRACTOR SHALL MAINTAIN COPIES OF ANY PERMITS AT THE JOB SITE FOR AGENCY INSPECTION AND PROVIDE A COPY TO THE ENGINEER PRIOR TO BEGINNING WORK.
5.
- CONTRACTOR SHALL LOCATE ALL UTILITIES AND PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY UTILITIES DAMAGED BY THE CONTRACTOR AND PROVIDE FOR SERVICE CONTINUATION DURING REPAIRS AT HIS EXPENSE.
6.
- INSTALLATION OF NEW UTILITIES SHALL BE COORDINATED WITH THE REQUIREMENTS OF THIS SCOPE OF WORK. NEW UTILITIES WILL BE INSTALLED BY OTHERS SHALLOWER OR DEEPER THAN THE BIOREMEDIATION PIPING, DEPENDING ON LOCATION. WITH APPROPRIATE SEPARATION. WHERE CONFLICTS OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
7.
- INSTALLATION OF HDPE PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED PROCEDURES. HDPE PIPE SHALL BE STORED AND HANDLED SO AS NOT TO DAMAGE THE PIPE.
8.
- HDPE PIPE SHALL BE JOINED BY SOCKET FUSION WELDING IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED PROCEDURES. REQUIREMENTS FOR FUSION TIME, TEMPERATURE, AND PRESSURE SHALL BE FOLLOWED. ALL PIPE JOINTS SHALL ALIGN NATURALLY AND BE STRESS-FREE.
9.
- ALL UNDERGROUND PVC SOIL VAPOR EXTRACTION PIPE SHALL BE BEDDED IN UNIFORM SAND THAT IS FREE OF OVERSIZE AGGREGATES, DEBRIS, ORGANIC MATERIAL, OR ANYTHING WHICH COULD DAMAGE THE PIPE. THE CONTRACTOR SHALL BE ENTIRELY RESPONSIBLE FOR ENSURING A UNIFORM, SLOPED BEDDING AND COVER THAT CONTINUOUSLY SUPPORTS THE PIPE AT PERCENT SLOPE.
10.
- OPEN TRENCHES SHALL BE COMPLETELY SURROUNDED BY TEMPORARY SAFETY FENCING AT ALL TIMES WHEN WORK IS NOT BEING DONE IN THE IMMEDIATE AREA. THE SAFETY FENCING SHALL BE MAINTAINED UNTIL THE TRENCH IS BACKFILLED AND COMPACTED TO THE EXISTING GRADE.
11.
- PRIOR TO BACKFILL, ALL NEW HDPE AND PVC PIPING SHALL BE HYDROSTATICALLY LEAK TESTED FOR A MINIMUM OF TWO HOURS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE ENGINEER MUST WITNESS PRESSURE TESTING.
12.
- TRENCH BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY FROM THE GROUND SURFACE TO 12 INCHES BELOW GROUND SURFACE. BACKFILL BELOW 12 INCHES SHALL BE MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 90 PERCENT OF THE MAXIMUM DRY DENSITY. THE CONTRACTOR SHALL BE ENTIRELY REPONSIBLE FOR ANY DAMAGE TO THE PIPE DURING BEDDING AND BACKFILL PLACEMENT.
13.
- COMPACTED BACKFILL SHALL BE TESTED IN ACCORDANCE WITH ASTM D1557 TO DOCUMENT MINIMUM COMPACTION REQUIREMENTS ARE MET.
14.
- HDPE PIPING SHALL BE INSTALLED, TESTED, AND COVERED WITH CONCRETE SLURRY ONE LAYER AT A TIME, IN ACCORDANCE WITH SEQUENCING SHOWN ON SHEETS C-1, C-1A, C-1B, C-1C, AND C-1D.
15.
- HDPE TO PVC TRANSITION FITTINGS CONNECTIONS SHALL BE ENCASED IN CONCRETE SLURRY TO PREVENT MOVEMENT.
16.
- CONCRETE SLURRY SHALL BE A MINIMUM 1-1/2 SACK MIX, WITH A MAXIMUM SLUMP OF 7 INCHES, AND A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 500 PSI. CONCRETE SLURRY WILL BE TESTED IN ACCORDANCE ACI301 TO DOCUMENT MINIMUM STRENGTH REQUIREMENTS ARE MET.
17.
- CONCRETE SHALL BE A STRUCTURAL MIX, WITH A MAXIMUM SLUMP OF 4 AND A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI.
18.
- THE CONTRACTOR SHALL MAINTAIN AN ORDERLY AND CLEAN JOB SITE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONSTRUCTION RELATED TRASH, DEBRIS, AND EXCESS MATERIALS.
19.
- THE CONTRACTORS LAYDOWN AREA FOR MATERIALS SHALL BE COORDINATED WITH THE ENGINEER AND OTHER ON-SITE CONTRACTORS. SECURITY FOR CONTRACTORS EQUIPMENT AND MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR.
20.
- THE CONTRACTOR SHALL REPLACE IN KIND ALL LANDSCAPE PLANTINGS AND GROUND COVERINGS DISTURBED OR DAMAGED BY THE WORK.

21.
- THE ELEVATION OF FEATURES (UTILITIES AND FOUNDATIONS) SHALL BE CONFIRMED WITH FIELD ENGINEER AND SITE CONSTRUCTION MANAGER BEFORE EXCAVATING TRENCHES THAT CROSS FEATURES.
22.
- FINAL GROUND SURFACE ELEVATION IN LANDSCAPED AREAS SHALL BE CONFIRMED WITH THE FIELD ENGINEER AND SITE CONSTRUCTION MANAGER BEFORE EXCAVATING FOR VAULT INSTALLATION.
23.
- ALL OPEN EXCAVATIONS SHALL BE SUPPORTED , AS NECESSARY, WITH SHORING IN ACCORDANCE WITH APPLICABLE OSHA REQUIREMENTS.
24.
- ALL PIPING SHALL BE PERMANENTLY LABELED AT EACH END WITH ASSOCIATED WELLHEAD IDENTIFICATION LABEL BEFORE COVERING WITH CONCRETE SLURRY OR SOIL.
25.
- ALL PIPE TERMINATIONS INSIDE VAULTS SHALL BE CORRECTLY LABELED WITH THE ASSOCIATED WELLHEAD IDENTIFICATION LABEL USING STAMPED STAINLESS STEEL TAGS.
26.
- ALL PIPE TRENCHES SHALL BE SURVEYED PRIOR TO BACKFILLING, FOR CENTERLINE OF TRENCH AND WELL LOCATIONS.
27.
- HDPE PIPING SHALL BE INCH DIAMETER SDR-11.
28.
- ALL 3 INCH AND INCH PVC PIPING, VALVES, AND FITTINGS SHALL BE SCHEDULE 80.
29.
- ALL SURVEY WORK SHALL BE COMPLETED BY A CALIFORNIA REGISTERED LAND SURVEYOR. THE LAND SURVEYOR SHALL ONLY USE THE SITE BENCHMARKS ESTABLISHED BY THIENES ENGINEERING FOR ALL SURVEY WORK.
30.
- THE SEQUENCING OF INSTALLATION OF PIPING THAT CROSSES UTILITIES IN STALLED BY OTHERS SHALL BE CORDINATED WITH THE ENGINEER AND THE DEVELOPERS CONTRACTOR AT LEAST 30 DAYS IN ADVANCE.

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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

GENERAL NOTES

Date:
DECEMBER 2003

Scale:
NOT TO SCALE

File No.
28882D10

Project Engineer:
RMF

Designed By:
TAH

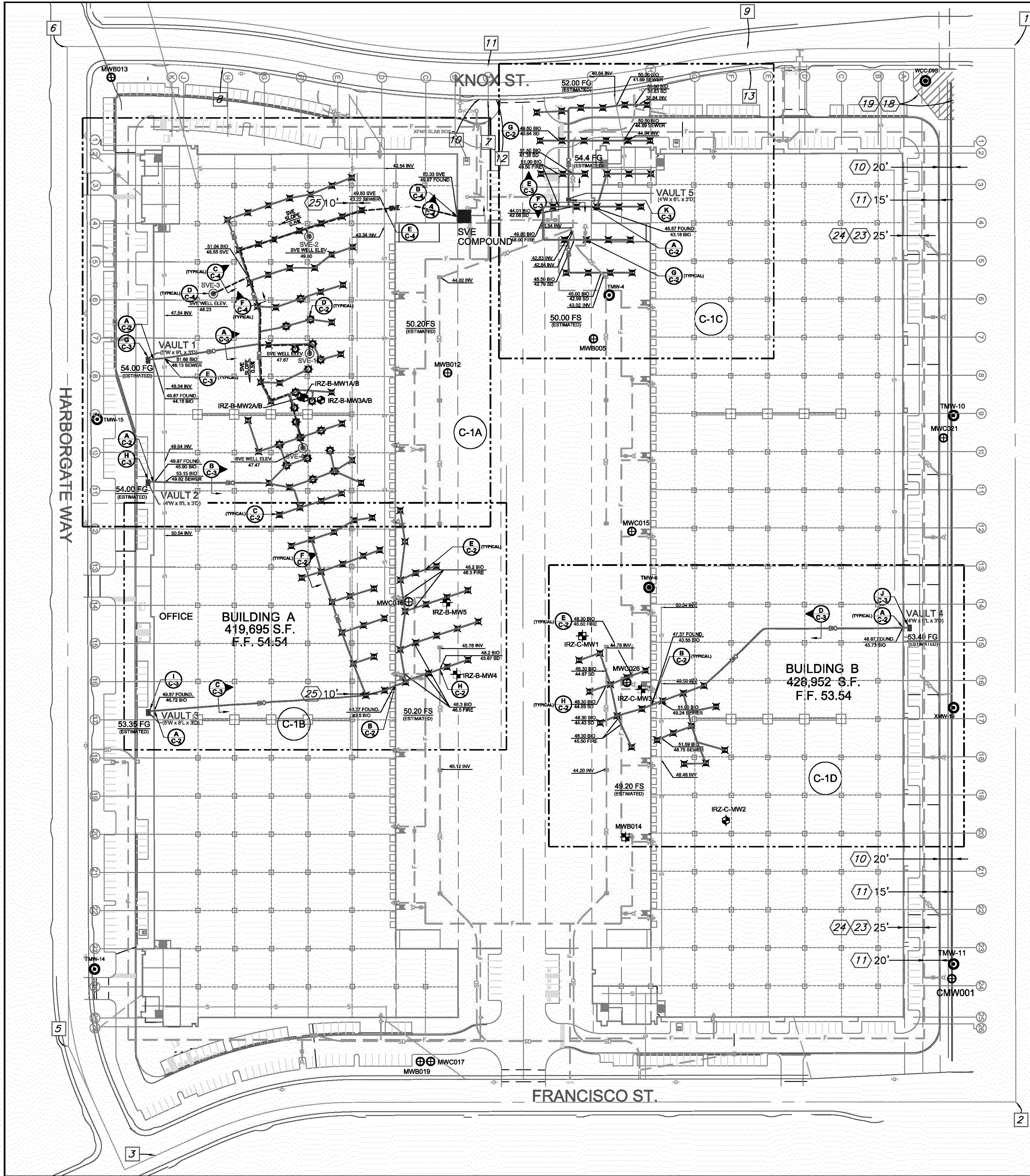
Drawn By:
GKM

Checked By:
TAH

Sheet No.:
2 of 10

Drawing No.
G-2

Issue
6



MONUMENT NOTES:

1. FD. BRASS CAP. STAMPED "CITY OF L.A.D.P.W.". DN. 1.25". IN MONUMENT WELL. AT C/L INT. OF KNOX ST. (EAST) & NORMANDIE AVENUE. AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62. USED TO ESTABLISH BASIS OF BEARINGS.
2. FD. BRASS CAP. STAMPED "CITY OF L.A.D.P.W.". DN. 1.25". IN MONUMENT WELL. AT C/L INT. OF FRANCISCO ST. & NORMANDIE AVENUE. AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62. USED TO ESTABLISH BASIS OF BEARINGS.
3. FD. S&W. STAMPED "LS 4463". FLUSH. ON C/L OF FRANCISCO ST., AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62.
4. FD. LT&T IN T.C. ON C/L PROD OF HARBORGATE WAY. 22.26' SE'LY OF C/L INT. OF FRANCISCO ST. & HARBORGATE WAY, NO REF.
5. FD. S&W. STAMPED "LS 4463". FLUSH. AT C/L PI OF HARBORGATE WAY, AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62.
6. FD. S&W. STAMPED "LS 4463". FLUSH. AT C/L INT OF HARBORGATE WAY & KNOX ST., AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62.
7. FD. LT&T. STAMPED "PLS 6034". IN SIDEWALK AT C/L PI OF KNOX ST., IN LIEU OF S&W. STAMPED "PLS 6034", AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62.
8. FD. LT&T IN TC. STAMPED "PLS 6034". ON A LINE RADIAL TO C/L OF KNOX ST., PASSING THROUGH C/L PI. 28.45' S'LY OF SAID C/L PI. NO REF.
9. FD S&W. STAMPED "PLS 6034". FLUSH. AT C/L PI OF KNOX ST., AS SHOWN ON TRACT NO. 52172. M.B. 1262/59-62.
10. FD. LT&T IN TC. STAMPED "PLS 6034". ON TANGENT PROD OF C/L OF KNOX ST., 10.68' W'LY OF C/L PI. NO REF.
11. FD. LT&T IN TC. STAMPED "PLS 6034". ON A LINE RADIAL TO C/L OF KNOX ST., PASSING THROUGH C/L PI. 44.56' N'LY OF SAID C/L PI. NO REF.
12. FD. LT&T IN TC. STAMPED "PLS 6034". ON TANGENT PROD OF C/L OF KNOX ST., 10.97' E'LY OF C/L PI. NO REF.
13. FD. LT&T IN TC. STAMPED "PLS 6034". ON A LINE RADIAL TO C/L OF KNOX ST., PASSING THROUGH C/L PI. 26.19' S'LY OF SAID C/L PI. NO REF.

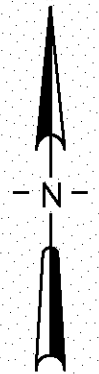
LEGEND

- IRZ-C-MW5 BIO-REMEDIATION WELL / GROUNDWATER MONITORING WELL
- IRZ-C-MW1 BIO-REMEDIATION WELL / GROUNDWATER MONITORING WELL THRU BUILDING SLAB
- MWC021 PROPOSED GROUNDWATER MONITORING WELL
- TMW-4 EXISTING GROUNDWATER MONITORING WELL
- SVE-1 NEW SOIL VAPOR EXTRACTION WELL (BELOW SLAB / GRADE)
- IRZ030A/B NEW DUAL BIOINJECTION POINT (BELOW SLAB / GRADE)
- IRZ031 NEW SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)
- SVE COMPOUND NEW SVE COMPOUND LOCATION (ABOVE GRADE)
- VAULT 1 NEW FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING (VAULT DIMENSIONS AS SHOWN)
- BOUNDARY OF ADDITIONAL ENLARGED SHEET
- F PROPOSED FIRE SYSTEM PIPE BY OTHERS
- S PROPOSED SEWER LINE BY OTHERS
- SD PROPOSED STORM DRAIN PIPE BY OTHERS
- W PROPOSED WATER LINE BY OTHERS
- BIO PROPOSED BIOREMEDIATION SYSTEM PIPING
- SVE PROPOSED SVE SYSTEM PIPING
- NUMBER SHEET INDICATES DETAIL
- # SEWER # BIO ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

NOTES:

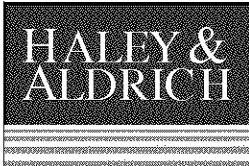
F.F. = FINISHED FLOOR
F.G. = FINISHED GRADE
INV = INVERT
BIO = BIOREMEDIATION PIPING (TOP OF SLURRY CONCRETE BENEATH THE UTILITIES, TOP OF SLURRY CONCRETE OVER THE UTILITIES)
SVE = SOIL VAPOR EXTRACTION PIPING (BOTTOM OF PIPE)
SD = STORM DRAIN (BOTTOM OF PIPE)
SEWER = SEWER LINE (BOTTOM OF PIPE)
FOUND. = PERIMETER FOUNDATION (BOTTOM OF FOOTING)

COMBINED LABEL SHOWN FOR DUAL BIOINJECTION POINTS REPRESENTS TWO SEPERATE AND UNIQUE POINTS AND LABELS (i.e. IRZ030A/B REPRESENTS IRZ030A AND IRZ030B) LOCATED APPROXIMATELY 3 FEET APART.



BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRUARY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRUARY 2003

ALL DIMENSIONS AND LOCATIONS APPROXIMATE



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ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

BIOREMEDIATION AMENDMENT
AND SOIL VAPOR EXTRACTION
PIPING LAYOUT

Date: DECEMBER 2003 Scale: AS SHOWN File No. 28882D02
0 80 160
SCALE IN FEET

Project Engineer:

RMF

Designed By:

TAH

Drawn By:

GKM

Checked By:

TAH

Sheet No.:

3 of 10

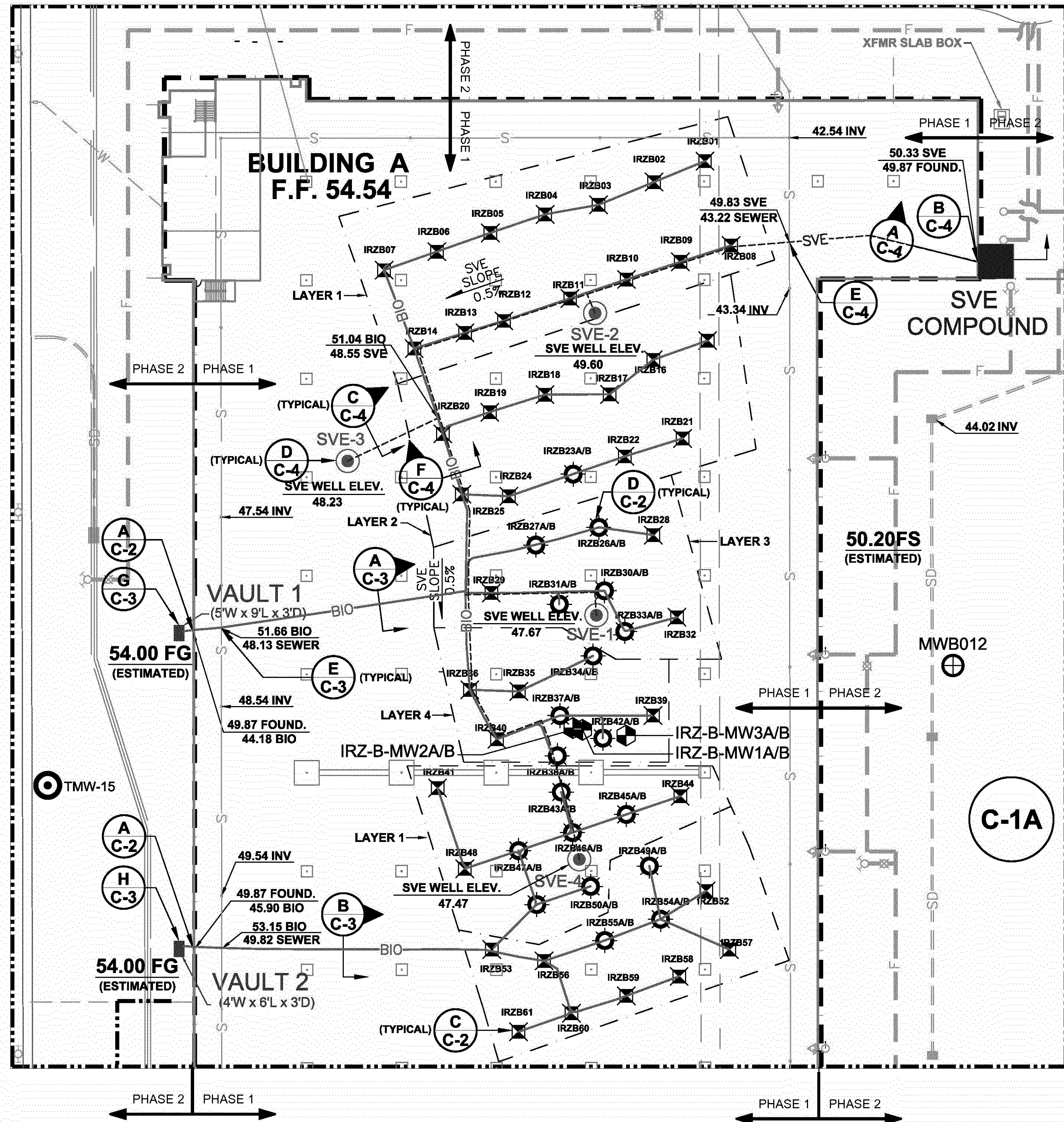
Drawing No.:

Issue

C-1 6

28882D06-AC

BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRAURY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRAURY 2003



LEGEND

- IRZ-C-MW2
BIO-REMEDATION WELL / GROUNDWATER MONITORING WELL THRU BUILDING SLAB
- PROPOSED GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SOIL VAPOR EXTRACTION WELL (BELOW SLAB / GRADE)
- DUAL BIOINJECTION POINT (BELOW SLAB / GRADE)
- SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)
- SVE COMPOUND
PROPOSED SVE COMPOUND LOCATION (ABOVE GRADE)
- VAULT 1
PROPOSED FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING (VAULT DIMENSIONS AS SHOWN)
- DIVISION OF TWO PRINCIPLE WORK PHASES
- PIPING LAYERS
- FIRE SYSTEM PIPE BY OTHERS
- SEWER LINE BY OTHERS
- STORM DRAIN PIPE BY OTHERS
- WATER LINE BY OTHERS
- BIOREMEDATION SYSTEM PIPING
- SVE SYSTEM PIPING
- NUMBER SHEET
INDICATES DETAIL
- # SEWER
BIO
ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

NOTES:

F.F. = FINISHED FLOOR
F.G. = FINISHED GRADE
INV = INVERT
BIO = BIOREMEDIATION PIPING (TOP OF SLURRY CONCRETE BENEATH THE UTILITIES, TOP OF SLURRY CONCRETE OVER THE UTILITIES)
SVE = SOIL VAPOR EXTRACTION PIPING (BOTTOM OF PIPE)
SD = STORM DRAIN (BOTTOM OF PIPE)
SEWER = SEWER LINE (BOTTOM OF PIPE)
FOUND. = PERIMETER FOUNDATION (BOTTOM OF FOOTING)

ELEVATION & LOCATIONS OF UTILITIES SHOWN HERE INSTALLED BY OTHERS ARE APPROXIMATE AND BASED ON DESIGN/CONSTRUCTION DRAWINGS. AS-BUILT DRAWINGS FOR UTILITIES INSTALLED BY OTHERS WERE NOT PUBLISHED OR AVAILABLE AT TIME OF PUBLISHING THESE DRAWINGS.

COMBINED LABEL SHOWN FOR DUAL BIOINJECTION POINTS REPRESENTS TWO SEPERATE AND UNIQUE POINTS AND LABELS (i.e. IRZ030A/B REPRESENTS IRZ030A AND IRZ030B) LOCATED APPROXIMATELY 3 FEET APART.

ORDER OF CONSTRUCTION:

BIOREMEDIATION PIPING INSTALLATION IN PHASE 1 OCCURED AFTER INSTALLATION OF SEWER LINE BY OTHERS.

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

6	12/8/03	AS-BUILT	GKM
5	6/20/03	APPROVED FOR CONSTRUCTION-REVISION 1	GKM
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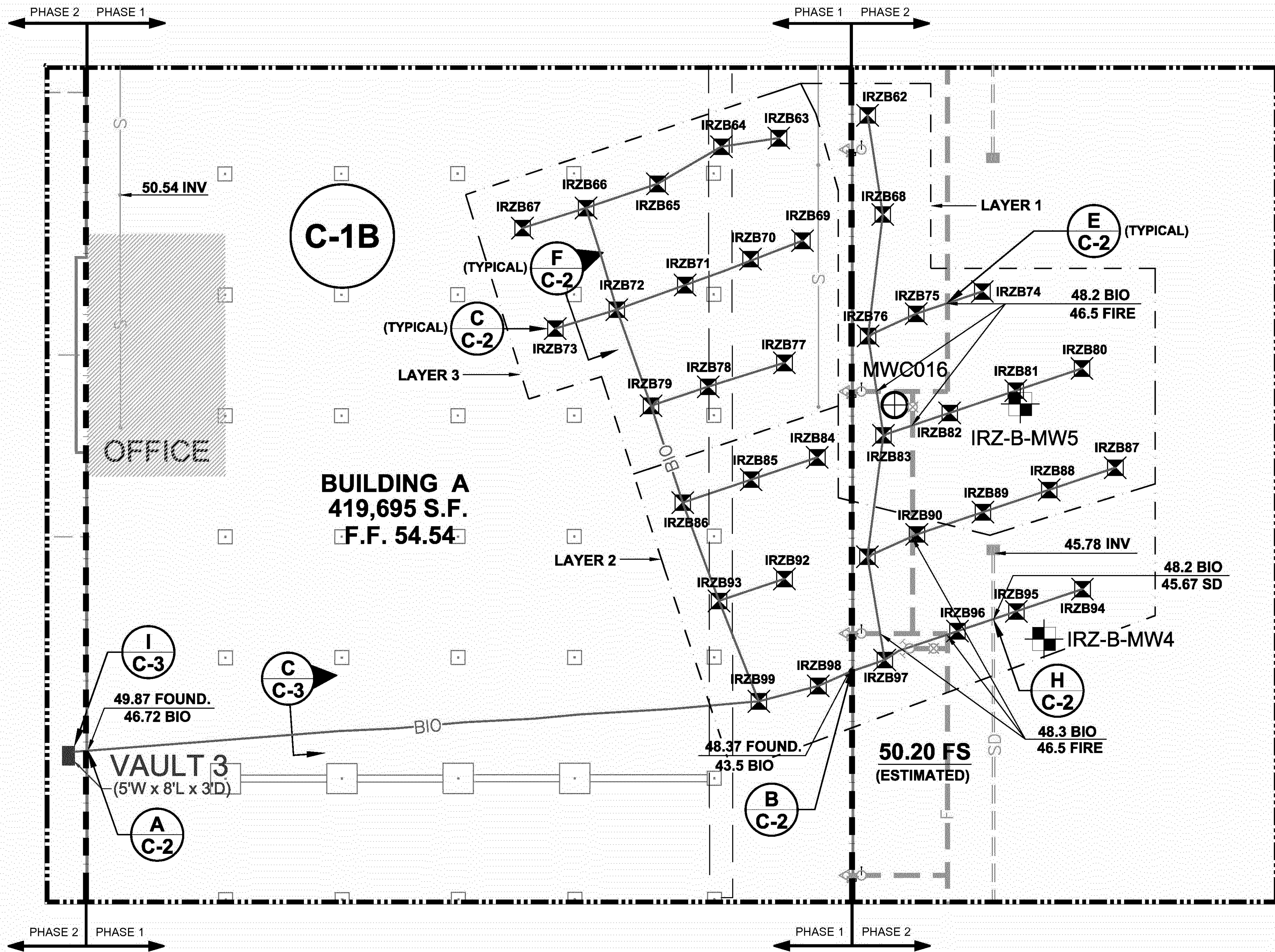
BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA
SYSTEM PIPING LAYOUT
NORTHWEST AREA

Date: DECEMBER 2003
Scale: AS SHOWN
File No. 28882D06
0 40 80
SCALE IN FEET

Project Engineer: RMF
Designed By: TAH
Drawn By: GKM
Checked By: TAH
Sheet No.: 4 of 10
Drawing No. C-1A
Issue 6

28882D07-AC

BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRAURY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRAURY 2003



LEGEND

IRZ-C-MW5

BIO-REMEDIATION WELL / GROUNDWATER MONITORING WELL

PROPOSED GROUNDWATER MONITORING WELL

TMW-4

EXISTING GROUNDWATER MONITORING WELL

IRZB01

SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)

VAULT 1

PROPOSED FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING
(VAULT DIMENSIONS AS SHOWN)

DIVISION OF TWO PRINCIPLE WORK PHASES

PIPING LAYERS

FIRE SYSTEM PIPE BY OTHERS

SEWER LINE BY OTHERS

STORM DRAIN PIPE BY OTHERS

WATER LINE BY OTHERS

BIOREMEDIATION SYSTEM PIPING

NUMBER
SHEET

INDICATES DETAIL

SEWER
BIO

ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

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ELEVATION & LOCATIONS OF UTILITIES SHOWN HERE INSTALLED BY OTHERS ARE
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DRAWINGS FOR UTILITIES INSTALLED BY OTHERS WERE NOT PUBLISHED OR
AVAILABLE AT TIME OF PUBLISHING THESE DRAWINGS.

ORDER OF CONSTRUCTION:

BIOREMEDIATION PIPING AND VAULT INSTALLATION IN PHASE 2 OCCURED
AFTER INSTALLATION OF FIRE AND STORM DRAIN PIPING BY OTHERS.

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

SYSTEM PIPING LAYOUT
SOUTHWEST AREA

Date: DECEMBER 2003
Scale: AS SHOWN
File No. 28882D07

0 30 60
SCALE IN FEET

Project Engineer:
RMF

Designed By:
TAH

Drawn By:
GKM

Checked By:
TAH

Sheet No.:
5 of 10

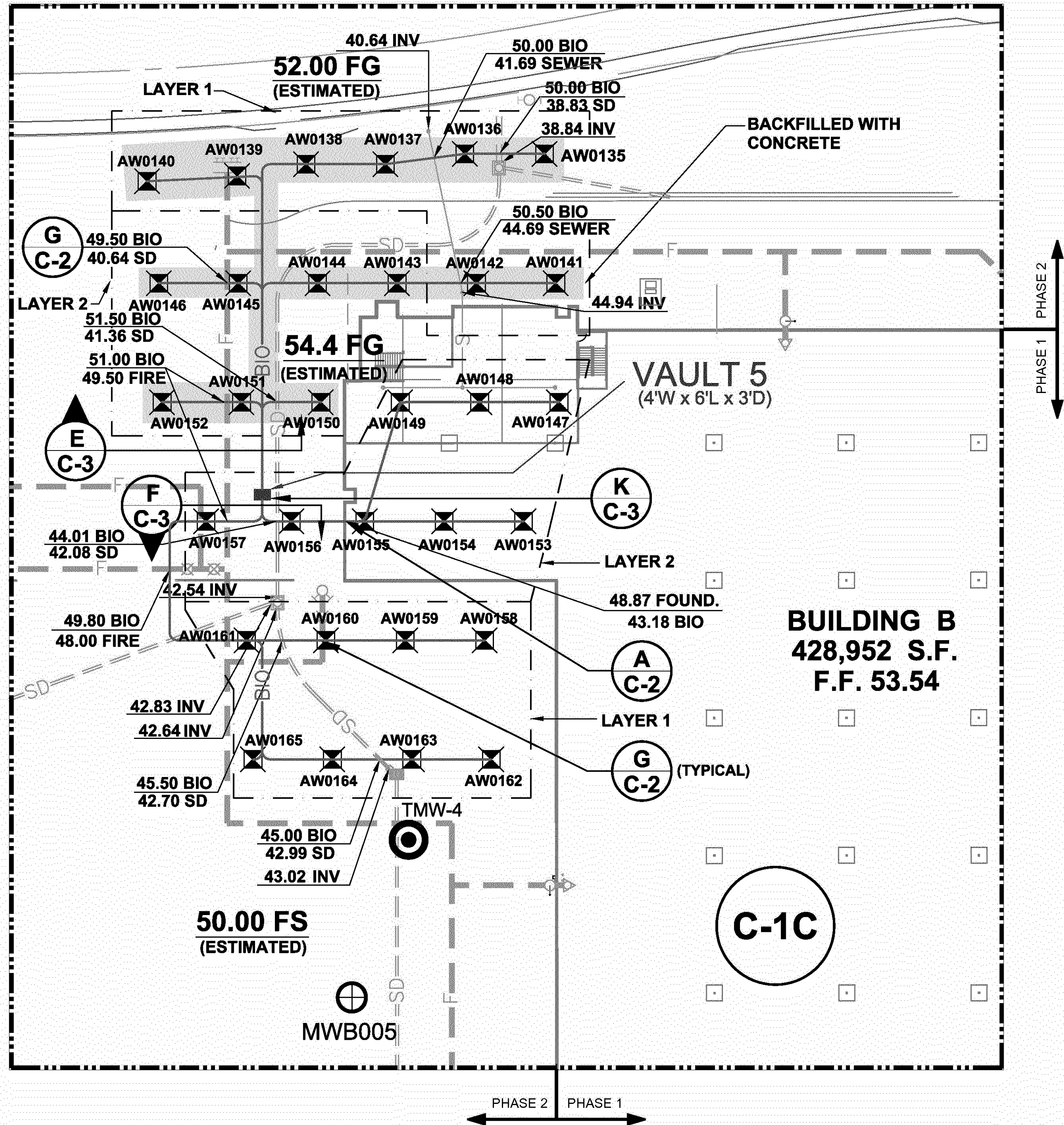
Drawing No.
C-1B

Issue
6

BOE-C6-0009834

28882D08-AC

BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRUARY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRUARY 2003



LEGEND

- PROPOSED GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)
- PROPOSED FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING (VAULT DIMENSIONS AS SHOWN)
- DIVISION OF TWO PRINCIPLE WORK PHASES
- PIPING LAYERS
- FIRE SYSTEM PIPE BY OTHERS
- SEWER LINE BY OTHERS
- STORM DRAIN PIPE BY OTHERS
- WATER LINE BY OTHERS
- BIOREMEDIATION SYSTEM PIPING
- PIPE TRENCH BACKFILLED WITH CONCRETE IN LIEU OF SLURRY
- INDICATES DETAIL
- ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

NOTES:

F.F. = FINISHED FLOOR
F.G. = FINISHED GRADE
INV = INVERT
BIO = BIOREMEDIATION PIPING (TOP OF SLURRY CONCRETE BENEATH THE UTILITIES, TOP OF SLURRY CONCRETE OVER THE UTILITIES)
SVE = SOIL VAPOR EXTRACTION PIPING
SD = STORM DRAIN (BOTTOM OF PIPE)
SEWER = SEWER LINE (BOTTOM OF PIPE)
FOUND. = PERIMETER FOUNDATION (BOTTOM OF FOOTING)

ELEVATION & LOCATIONS OF UTILITIES SHOWN HERE INSTALLED BY OTHERS ARE APPROXIMATE AND BASED ON DESIGN/CONSTRUCTION DRAWINGS. AS-BUILT DRAWINGS FOR UTILITIES INSTALLED BY OTHERS WERE NOT PUBLISHED OR AVAILABLE AT TIME OF PUBLISHING THESE DRAWINGS.

ORDER OF CONSTRUCTION:

BIOREMEDIATION PIPING AND VAULT INSTALLATION IN PHASE 2 OCCURED AFTER INSTALLATION OF FIRE PIPE, STORM DRAIN, AND SEWER LINE BY OTHERS.

VERIFY ORDER AND THE ELEVATIONS IN THE FIELD WITH THE ENGINEER.

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

6	12/8/03	AS-BUILT	GKM
5	6/20/03	APPROVED FOR CONSTRUCTION-REVISION 1	GKM
4	5/1/03	APPROVED FOR CONSTRUCTION	GKM
3	3/24/03	APPROVED FOR BID	GKM
2	3/19/03	DRAFT TO CLIENT	GKM
1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM
ISSUE	DATE	REVISIONS	BY

HALEY & ALDRICH

UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

Haley & Aldrich, Inc.
9040 FRIARS ROAD, SUITE 220
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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

SYSTEM PIPING LAYOUT
NORTHEAST AREA

Date:
DECEMBER 2003

Scale:
AS SHOWN

File No.
28882D08

0 30 60
SCALE IN FEET

Project Engineer:

RMF

Designed By:

TAH

Drawn By:

GKM

Checked By:

TAH

Sheet No.:

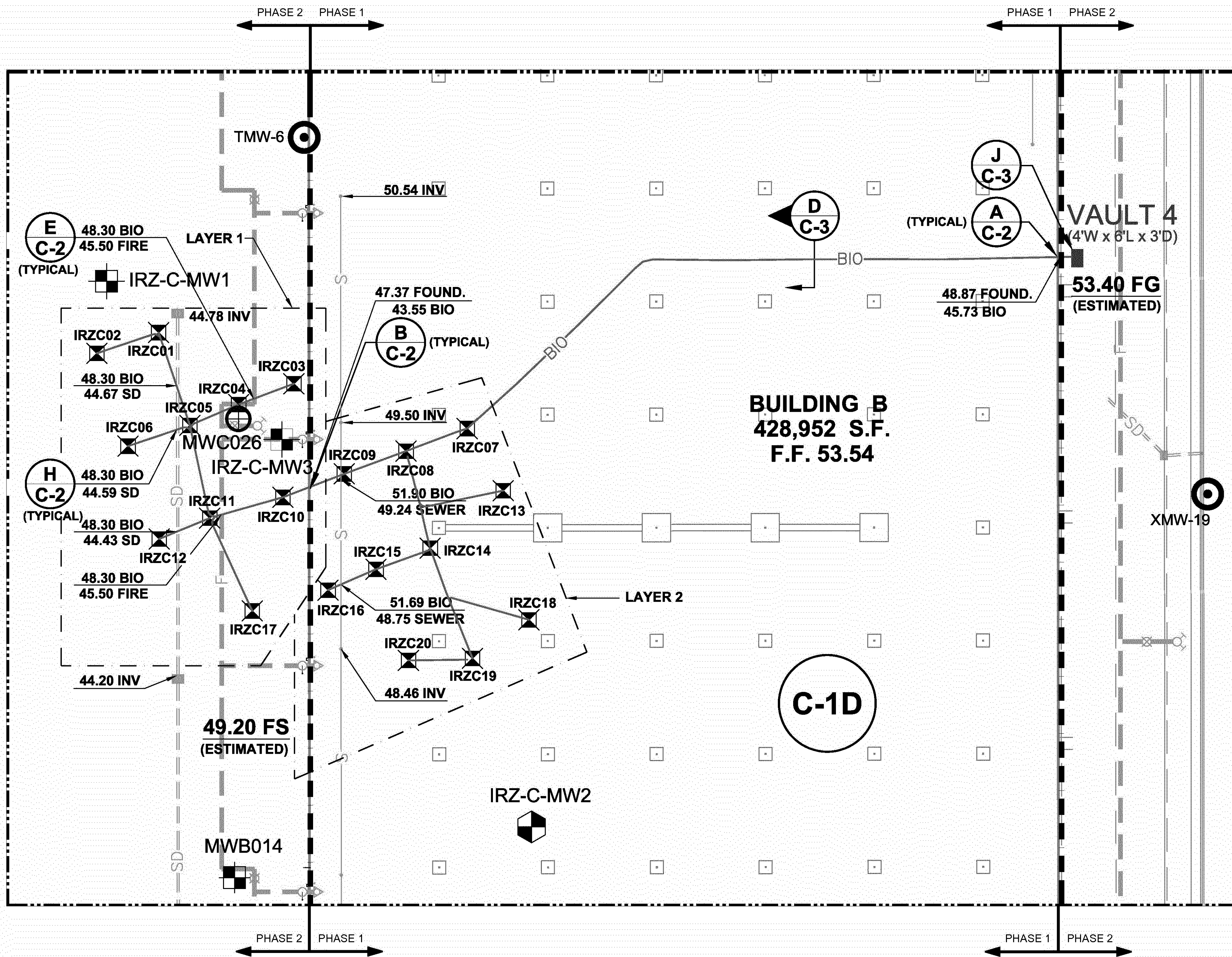
6 of 10

Drawing No.

C-1C 6

28882D09-AC

BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRUARY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRUARY 2003



LEGEND

- IRZ-C-MW5 BIO-REMEDIATION WELL / GROUNDWATER MONITORING WELL
- IRZ-C-MW2 BIO-REMEDIATION WELL / GROUNDWATER MONITORING WELL THRU BUILDING SLAB
- PROPOSED GROUNDWATER MONITORING WELL
- TMW-4 EXISTING GROUNDWATER MONITORING WELL
- IRZC01 SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)
- VAULT 1 PROPOSED FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING (VAULT DIMENSIONS AS SHOWN)
- DIVISION OF TWO PRINCIPLE WORK PHASES
- PIPING LAYERS
- FIRE SYSTEM PIPE BY OTHERS
- SEWER LINE BY OTHERS
- STORM DRAIN PIPE BY OTHERS
- WATER LINE BY OTHERS
- BIOREMEDICATION SYSTEM PIPING
- INDICATES DETAIL
- ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

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ORDER OF CONSTRUCTION:

BIOREMEDIATION PIPING INSTALLATION IN PHASE 1 OCCURED AFTER INSTALLATION OF SEWER LINE BY OTHERS.

BIOREMEDIATION PIPING INSTALLATION IN PHASE 2 OCCURED AFTER INSTALLATION OF FIRE AND STORM DRAIN PIPING BY OTHERS.

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

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1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM
ISSUE	DATE	REVISIONS	BY

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BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

SYSTEM PIPING LAYOUT SOUTHEAST AREA

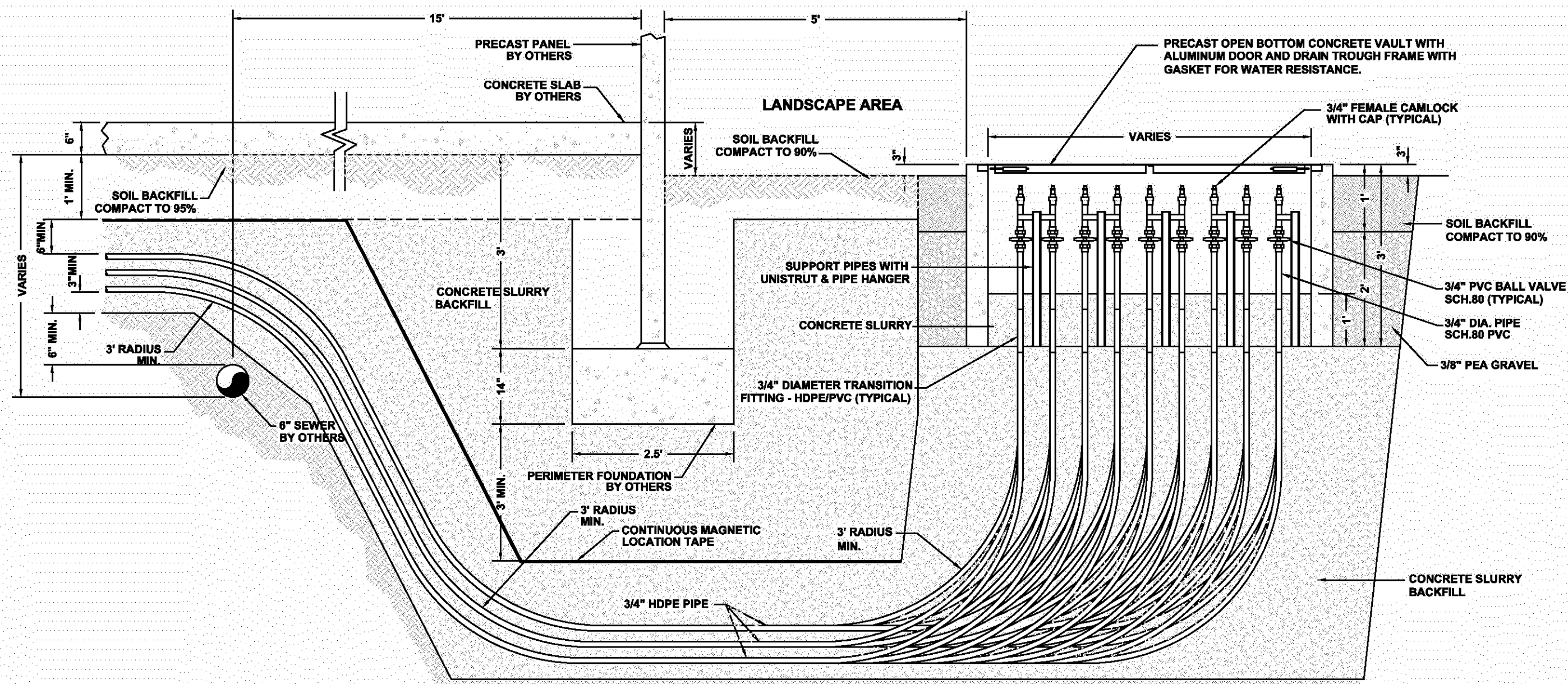
Date: DECEMBER 2003 Scale: AS SHOWN File No. 28882D09

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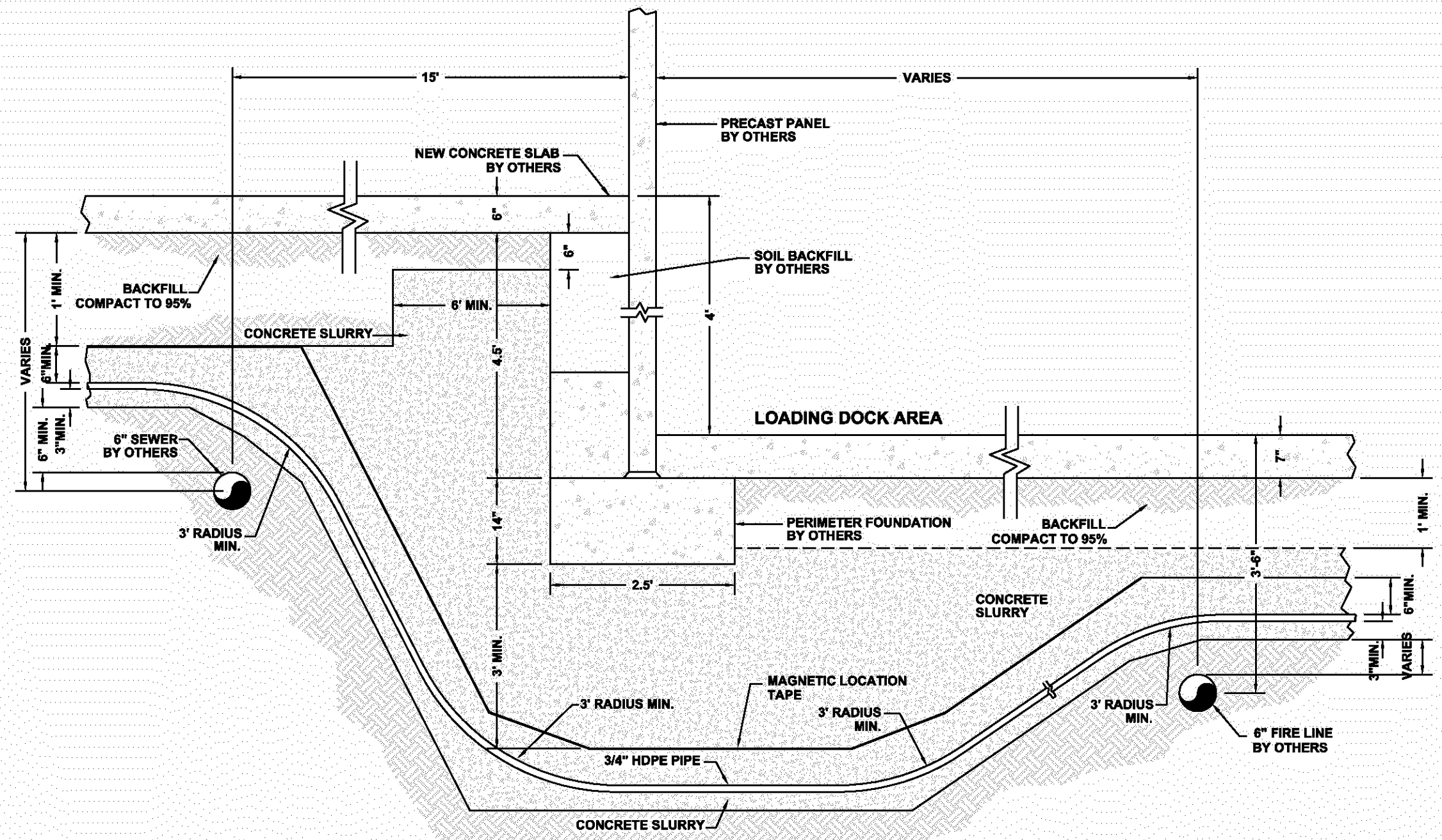
Project Engineer:
RMF
Designed By:
TAH
Drawn By:
GKM
Checked By:
TAH

Sheet No.:
7 of 10

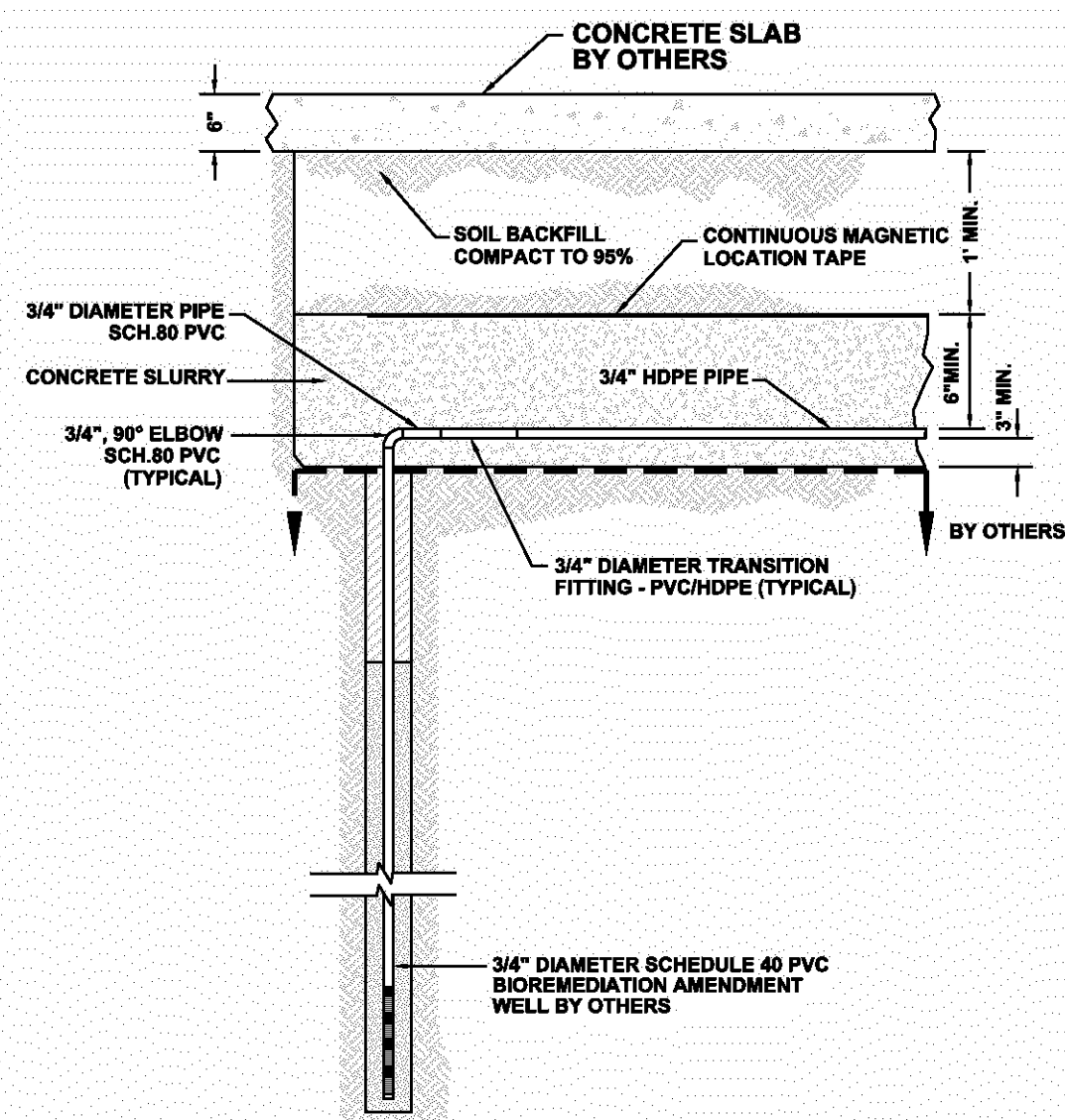
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C-1D 6



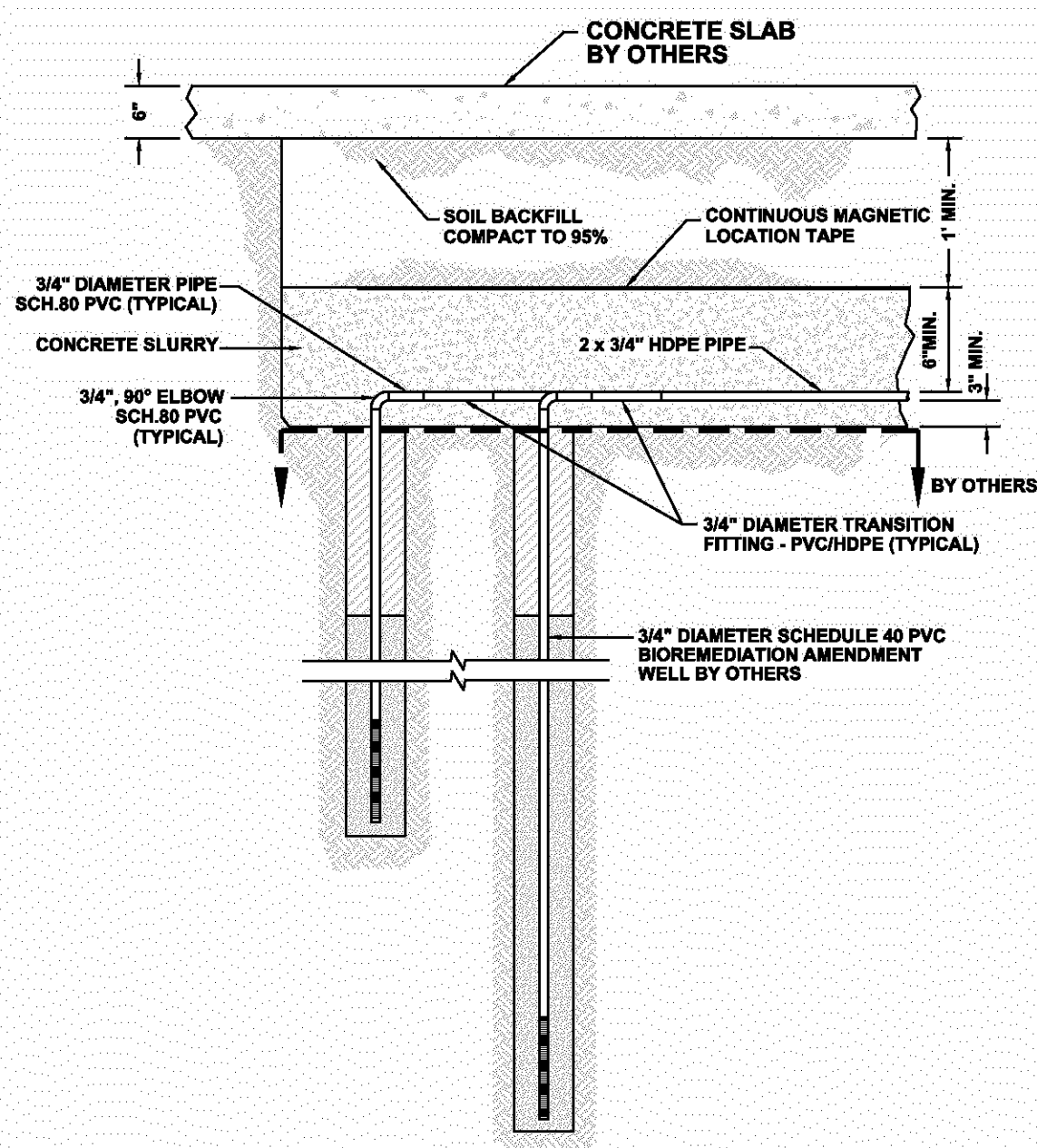
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C-2 BIOREMEDIATION AMENDMENT PIPING
AND VAULT AT PERIMETER FOUNDATION
NOT TO SCALE



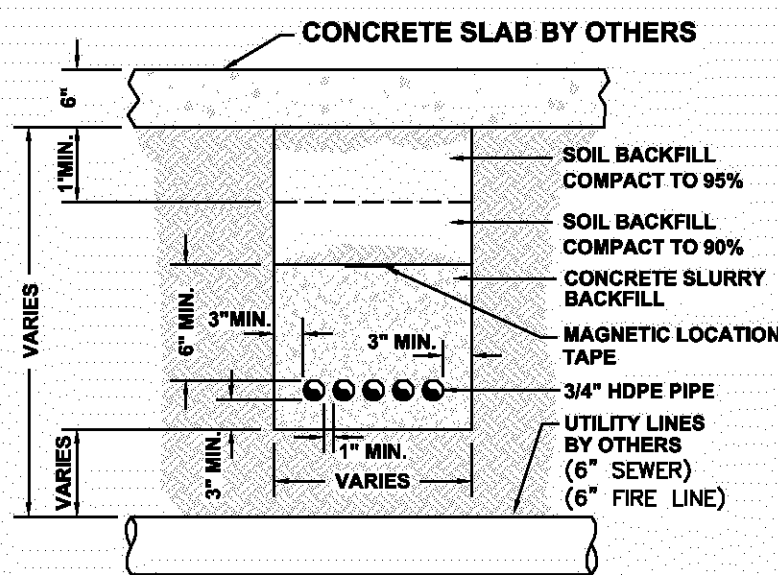
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C-2 BIOREMEDIATION AMENDMENT PIPING
CROSS-SECTION AT PERIMETER FOUNDATION
LOADING DOCK AREA
NOT TO SCALE



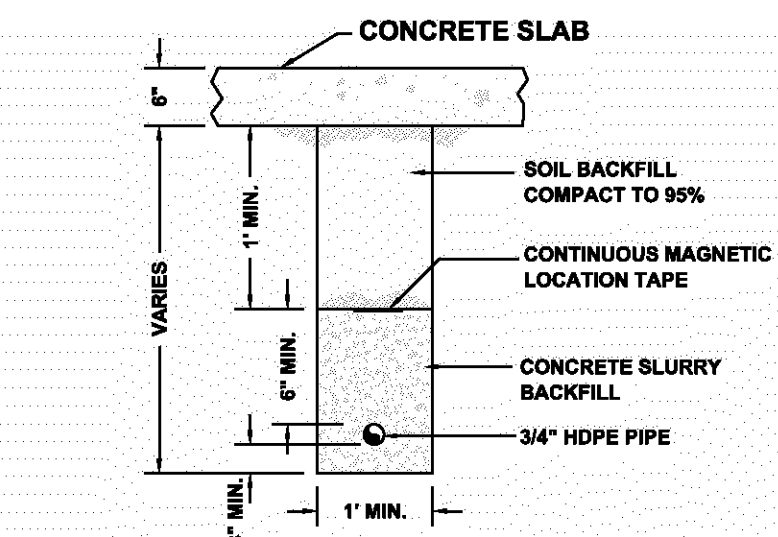
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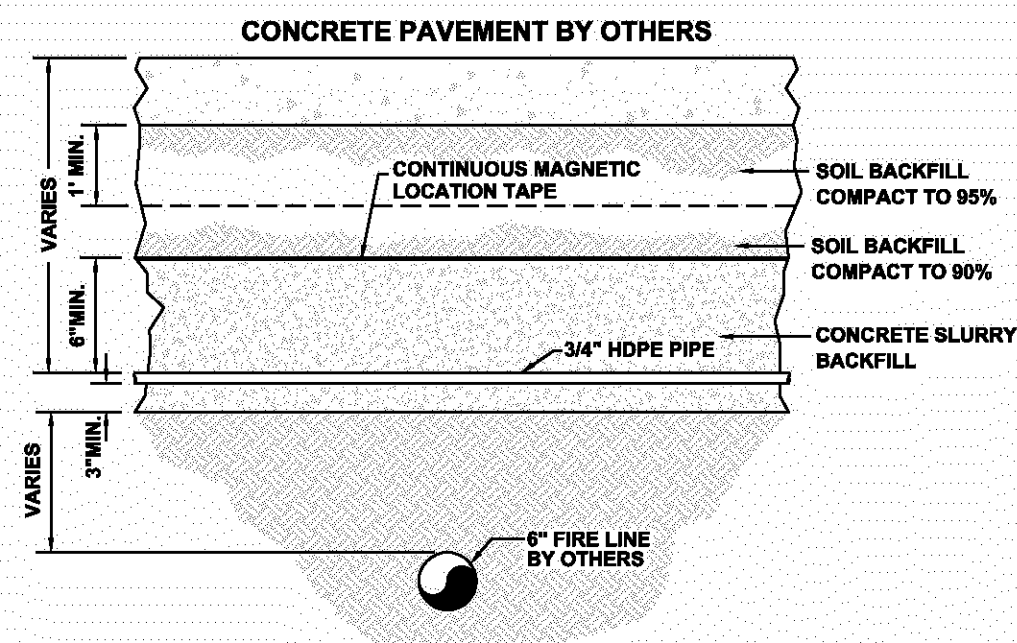
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C-2 DUAL BIOREMEDIATION
AMENDMENT WELLHEAD
NOT TO SCALE



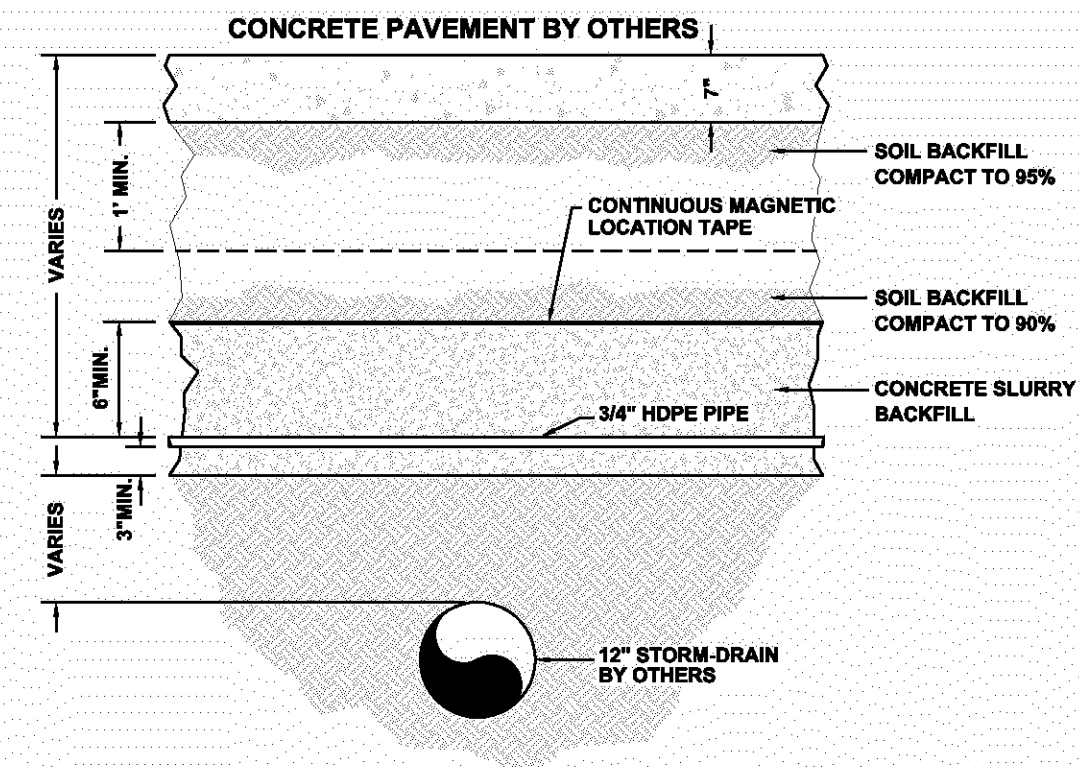
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C-2 BIOREMEDIATION AMENDMENT
PIPING TRENCH AT UTILITY
CROSSING
NOT TO SCALE



F
C-2 BIOREMEDIATION AMENDMENT
PIPING LATERAL TRENCH
NOT TO SCALE



G
C-2 BIOREMEDIATION AMENDMENT PIPING
CROSS-SECTION WITH FIRE LINE PIPE
AT NORTHEAST CORNER BLDG. B
NOT TO SCALE



H
C-2 BIOREMEDIATION AMENDMENT PIPING
CROSS-SECTION WITH STORM-DRAIN PIPE
AT LOADING AREA
NOT TO SCALE

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

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1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM
ISSUE	DATE	REVISIONS	BY

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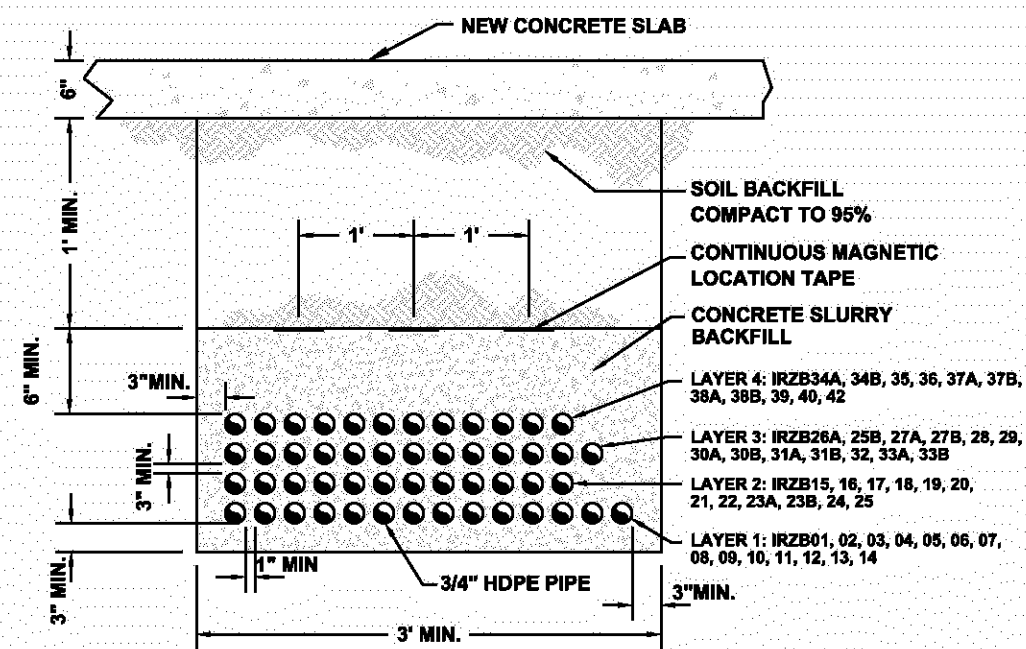
BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

CIVIL DETAILS-BIOREMEDIATION
AMENDMENT PIPING AND
VAULTS

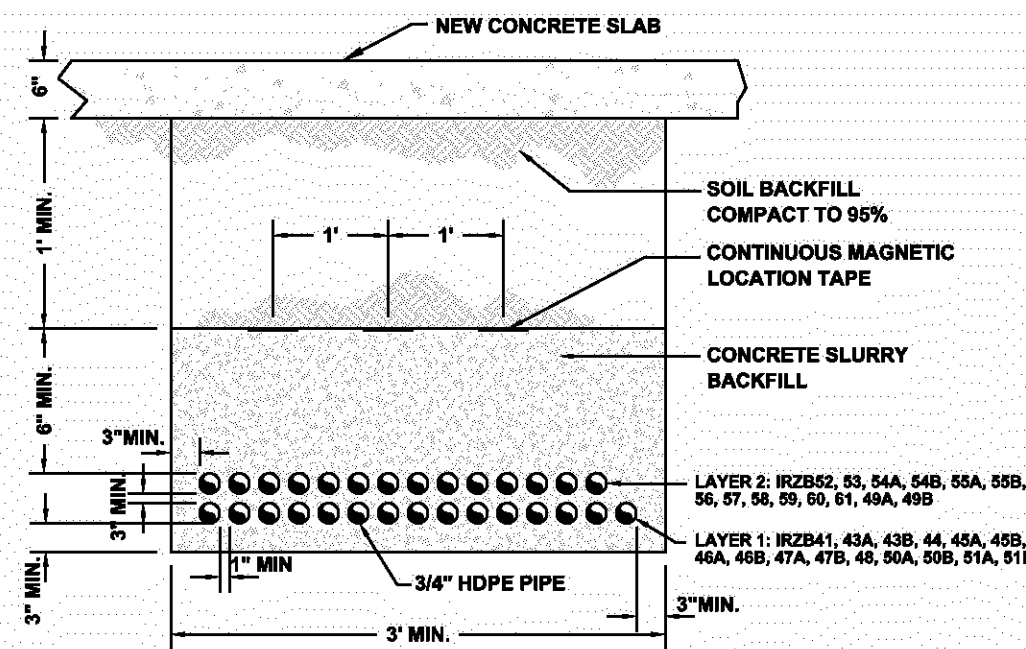
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Project Engineer:	RMF
Designed By:	TAH
Drawn By:	GKM
Checked By:	TAH
Sheet No.:	8 of 10
Drawing No.	C-2
Issue	6

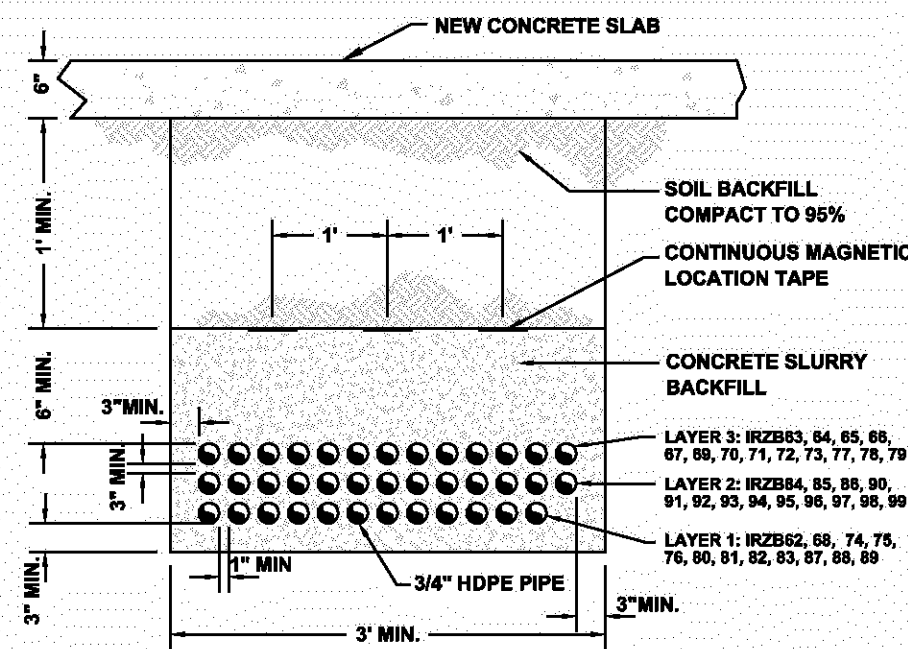
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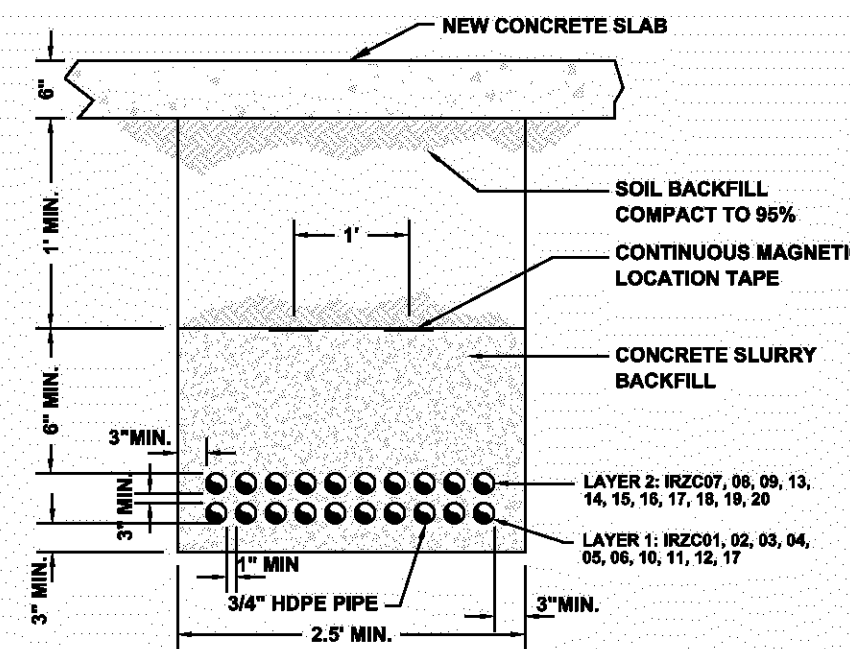
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AMENDMENT PIPING TRENCH
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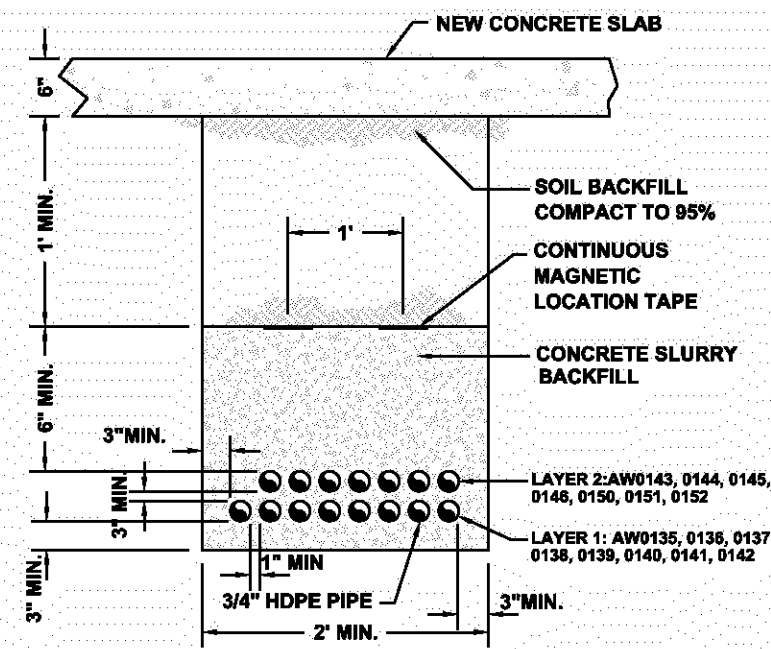
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AMENDMENT PIPING TRENCH
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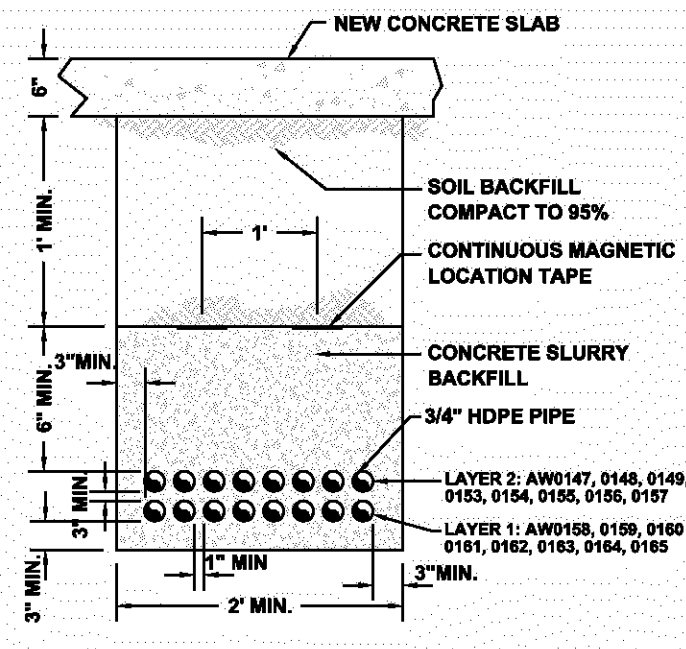
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AMENDMENT PIPING TRENCH
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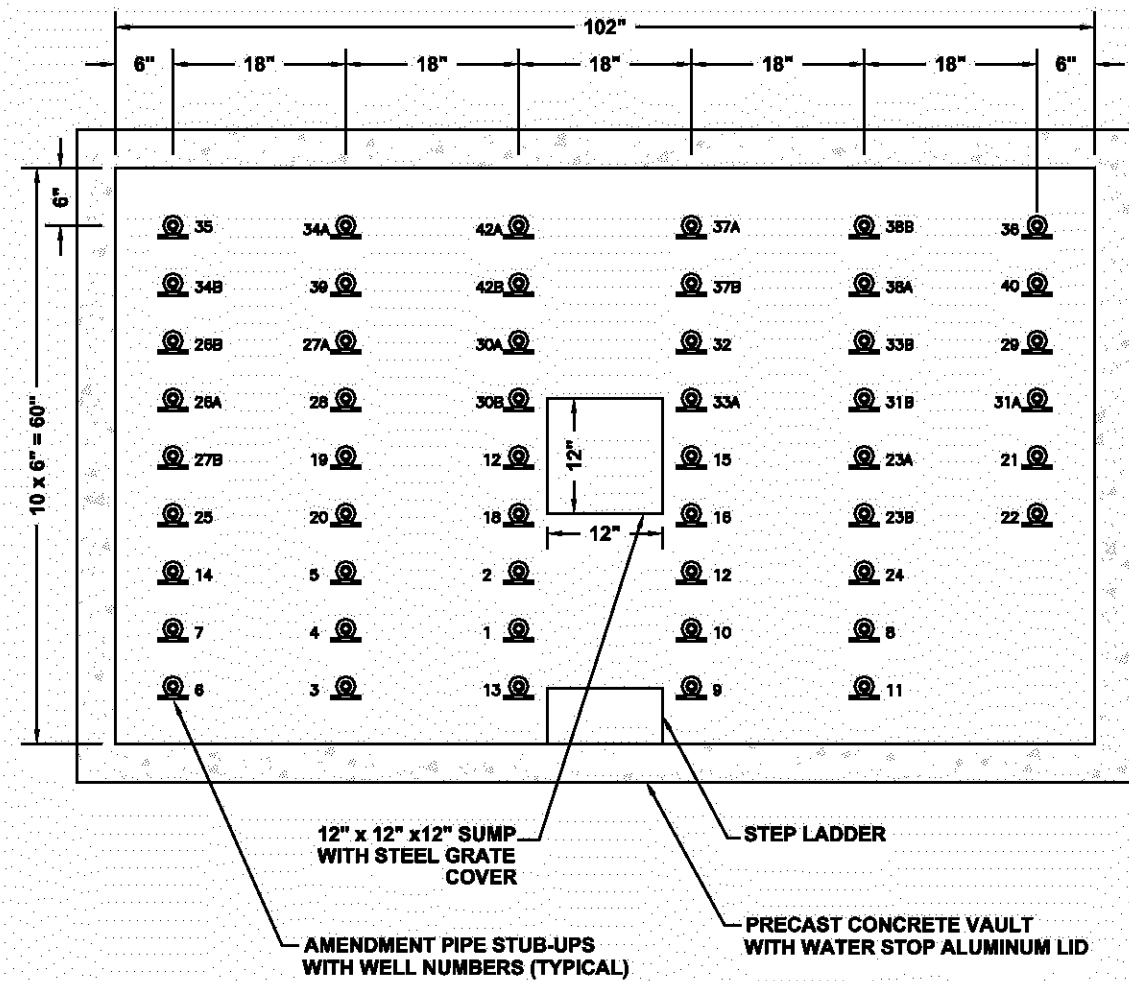
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C-3 COMMON BIOREMEDIATION
AMENDMENT PIPING TRENCH
NOT TO SCALE



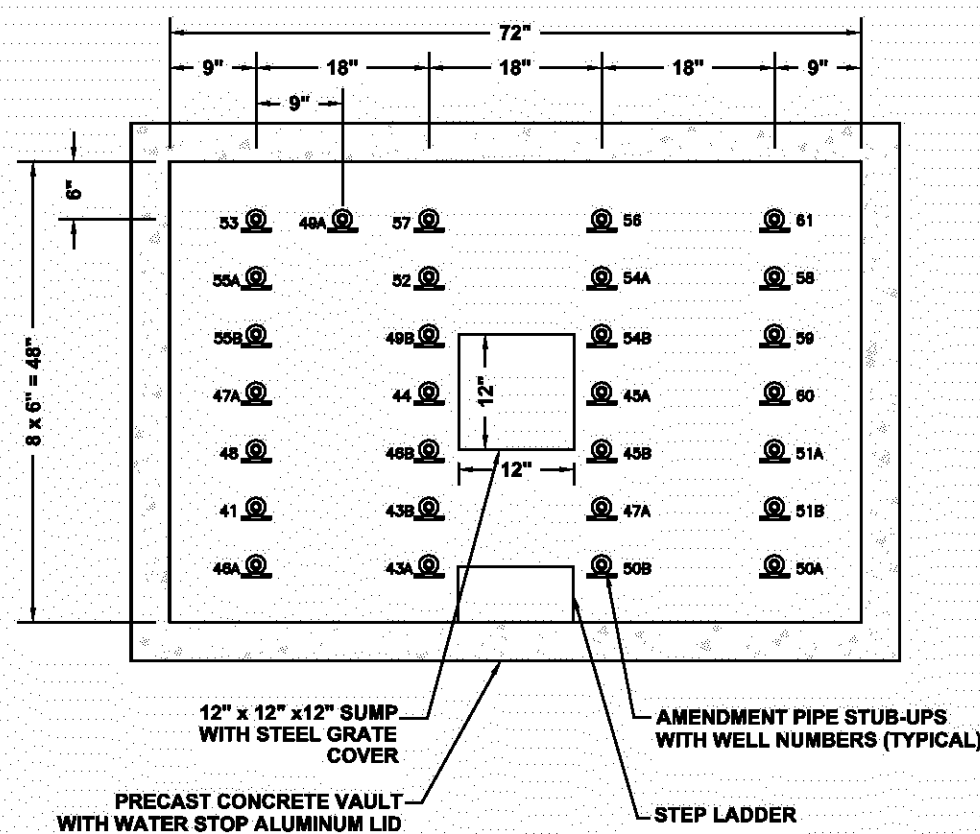
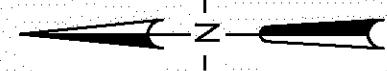
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C-3 COMMON BIOREMEDIATION
AMENDMENT PIPING TRENCH
NOT TO SCALE



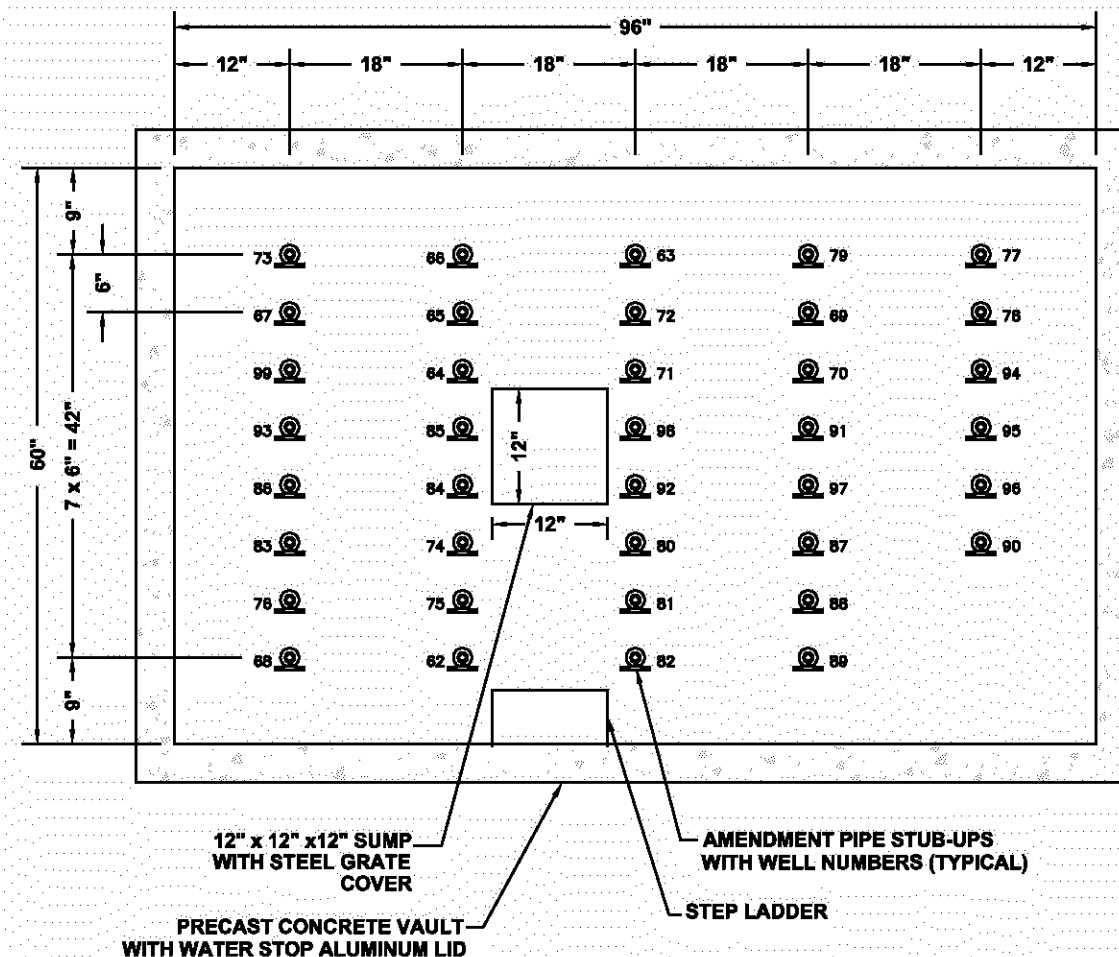
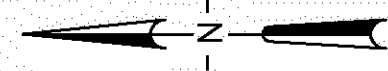
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C-3 COMMON BIOREMEDIATION
AMENDMENT PIPING TRENCH
NOT TO SCALE



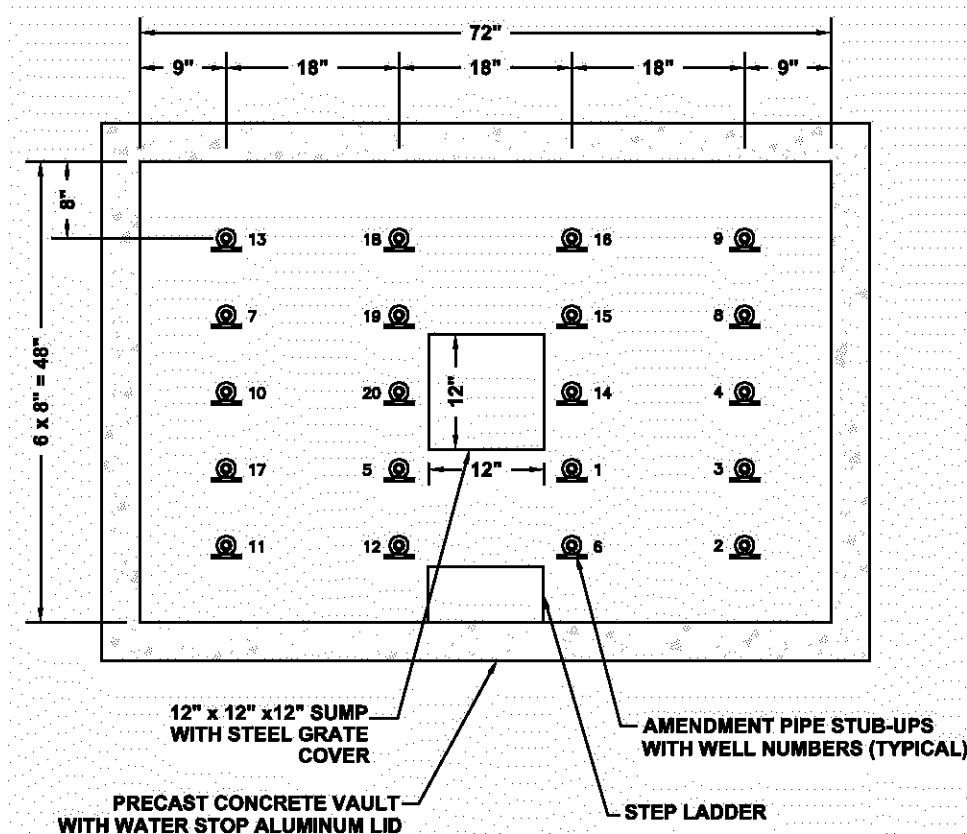
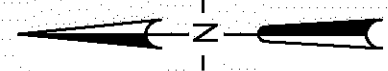
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C-3 BIOREMEDIATION AMENDMENT
VAULT 1 - PLAN VIEW
NOT TO SCALE



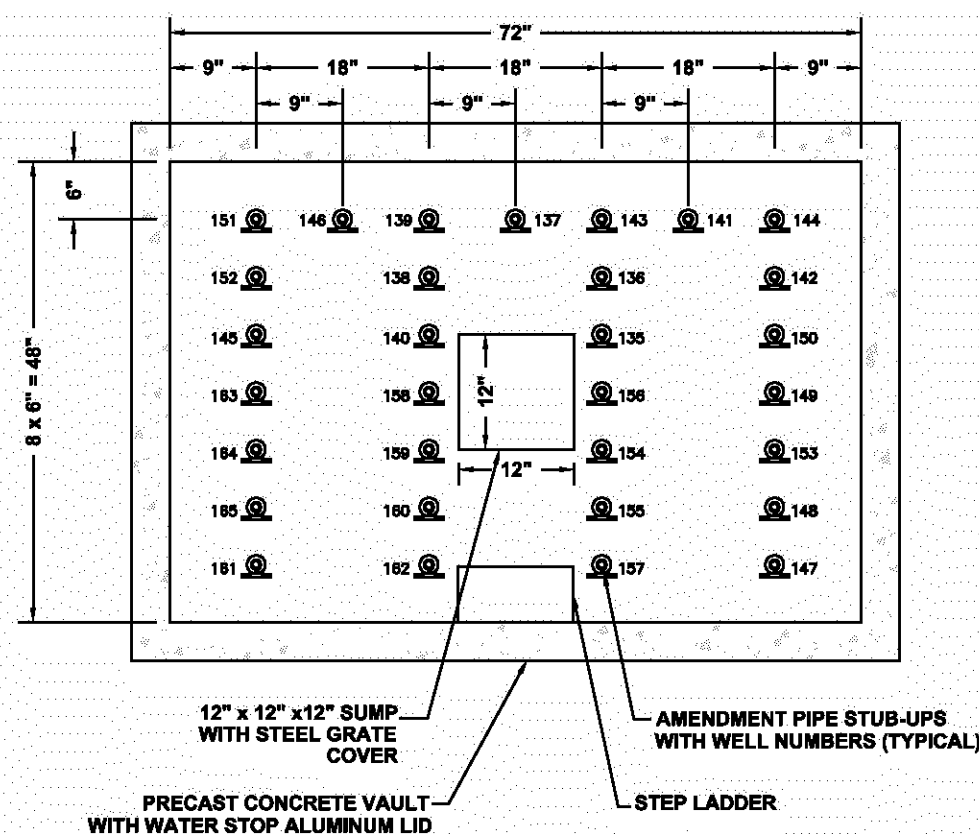
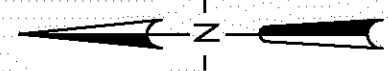
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C-3 BIOREMEDIATION AMENDMENT
VAULT 2 - PLAN VIEW
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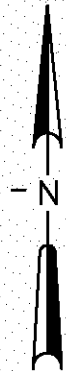
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C-3 BIOREMEDIATION AMENDMENT
VAULT 3 - PLAN VIEW
NOT TO SCALE



J
C-3 BIOREMEDIATION AMENDMENT
VAULT 4 - PLAN VIEW
NOT TO SCALE



K
C-3 BIOREMEDIATION AMENDMENT
VAULT 5 - PLAN VIEW
NOT TO SCALE



ALL DIMENSIONS AND LOCATIONS APPROXIMATE

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2	3/19/03	DRAFT TO CLIENT	GKM
1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM
ISSUE	DATE	REVISIONS	BY



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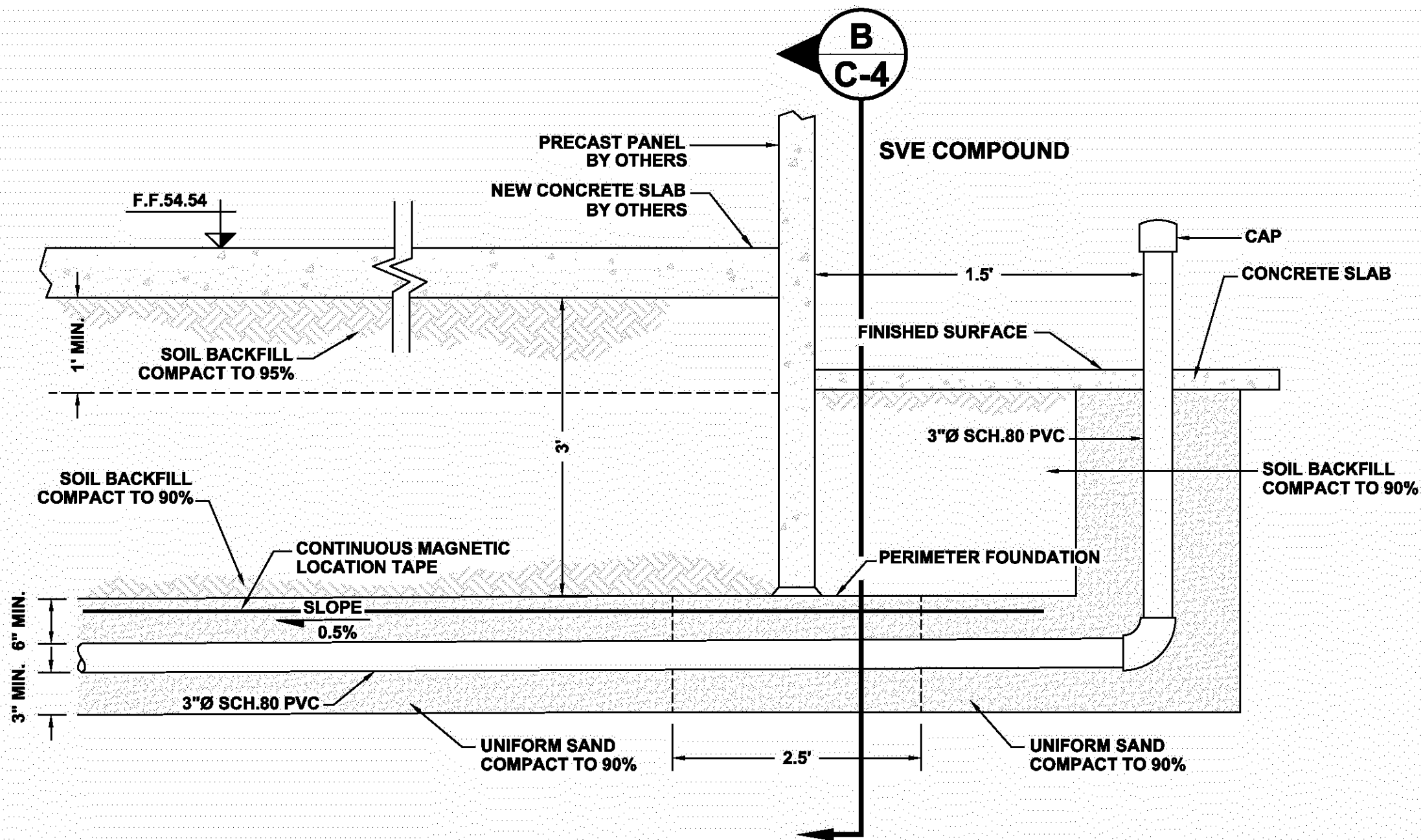
BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

CIVIL DETAILS-BIOREMEDIATION
AMENDMENT PIPING TRENCHES
AND VAULTS

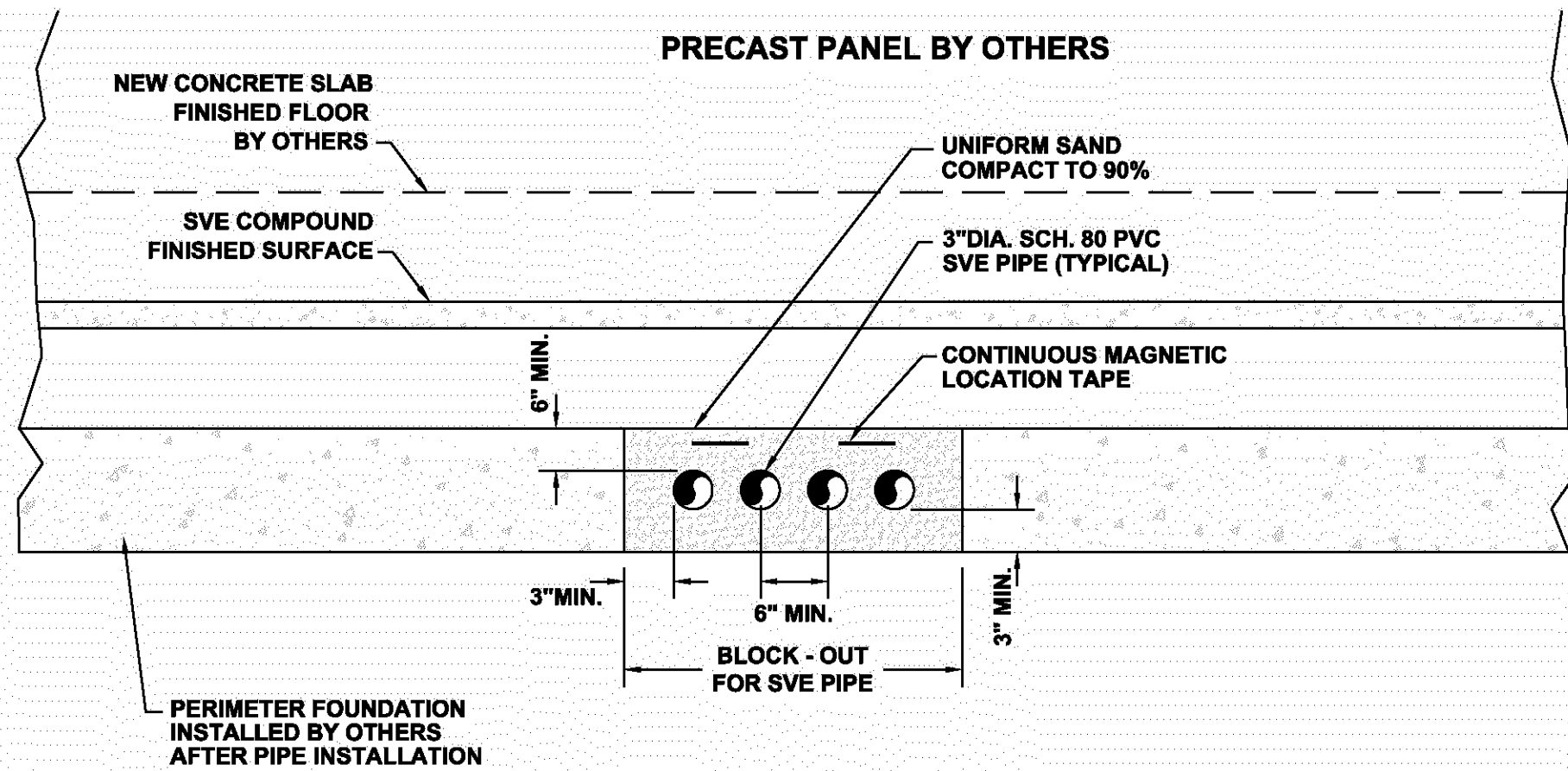
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Project Engineer:	RMF
Designed By:	TAH
Drawn By:	GKM
Checked By:	TAH
Sheet No.:	9 of 10
Drawing No.	C-3
Issue	6

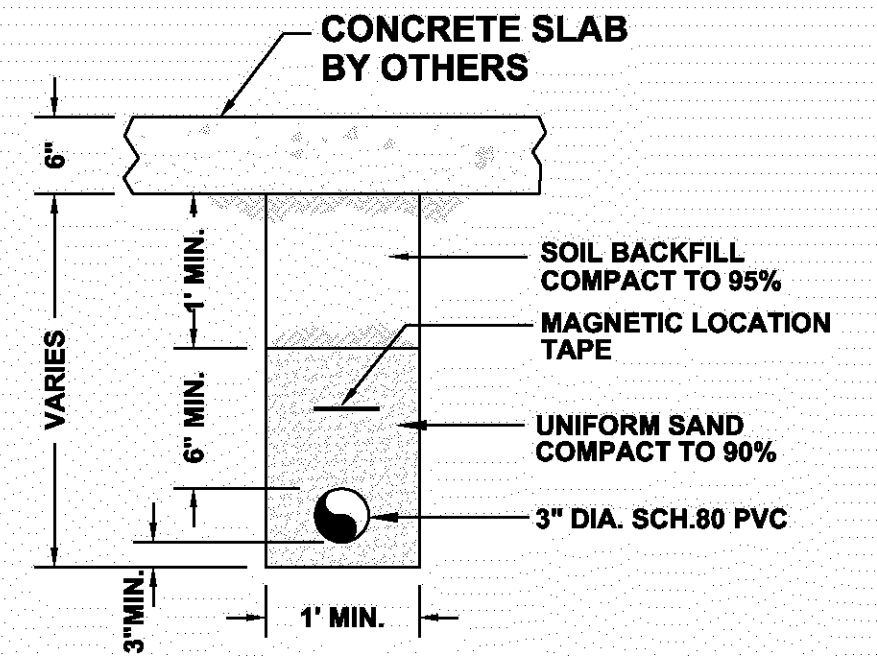
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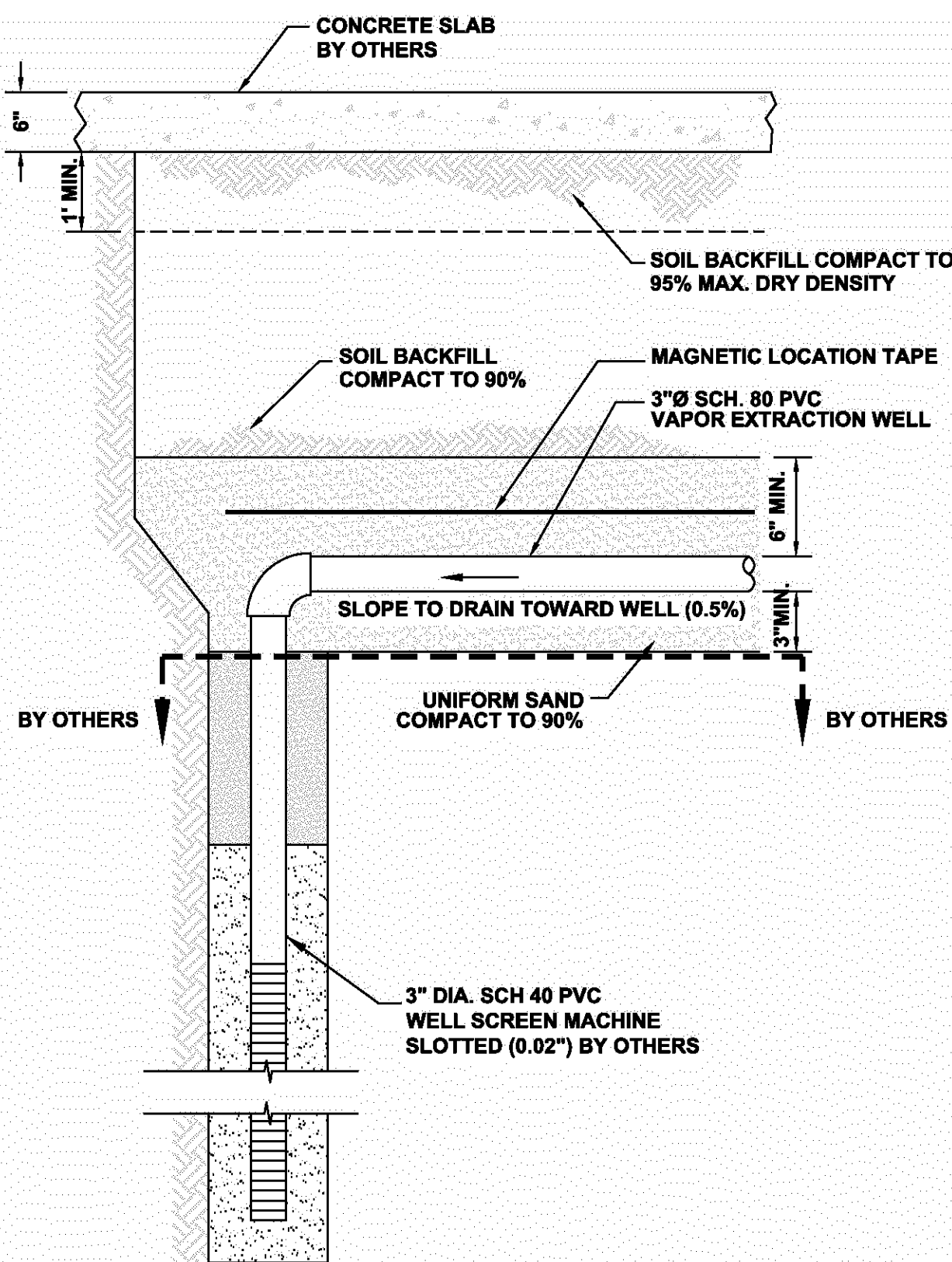
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C-4 CROSS-SECTION AT PERIMETER FOUNDATION
NOT TO SCALE



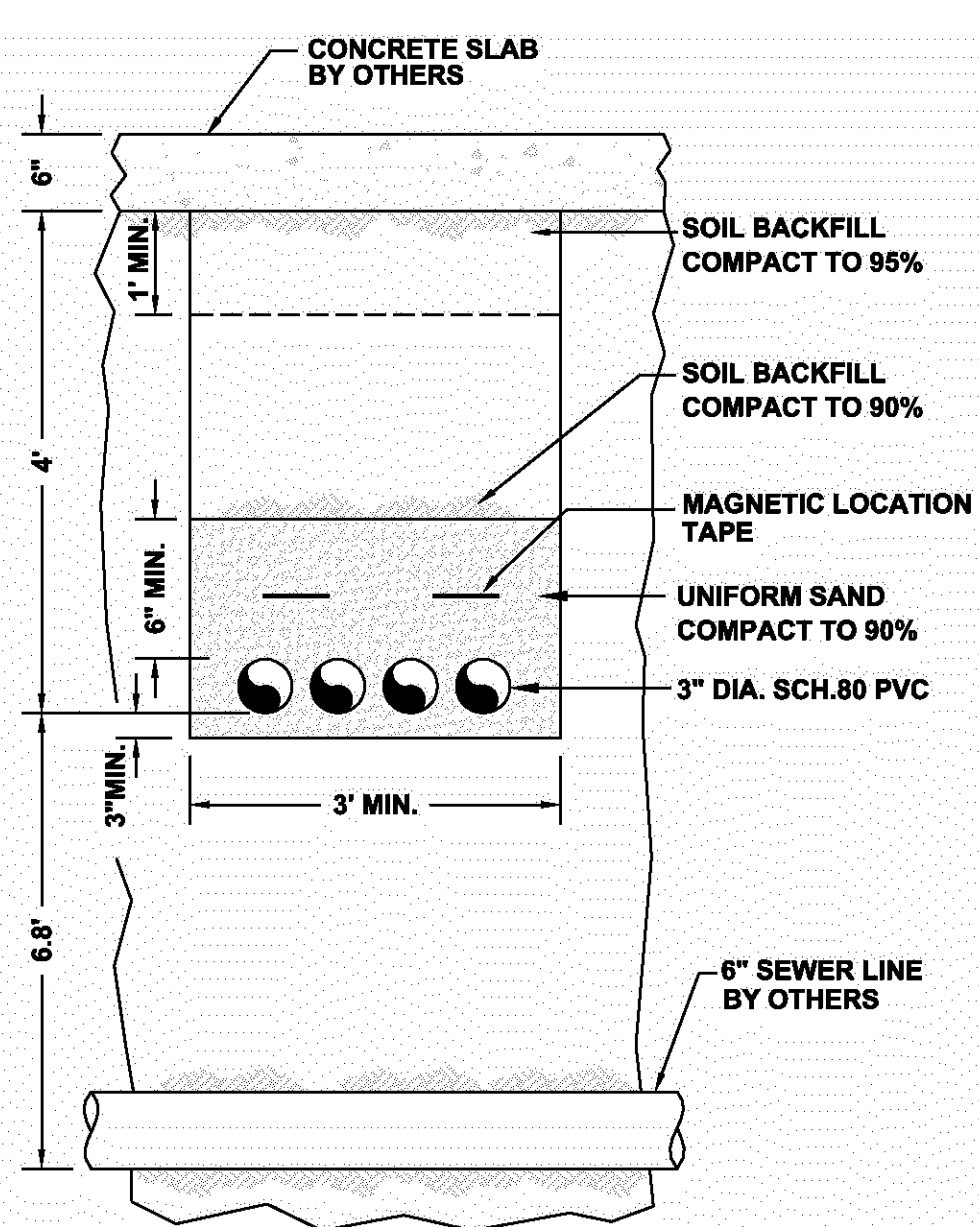
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C-4 CROSS-SECTION AT PERIMETER FOUNDATION
NOT TO SCALE



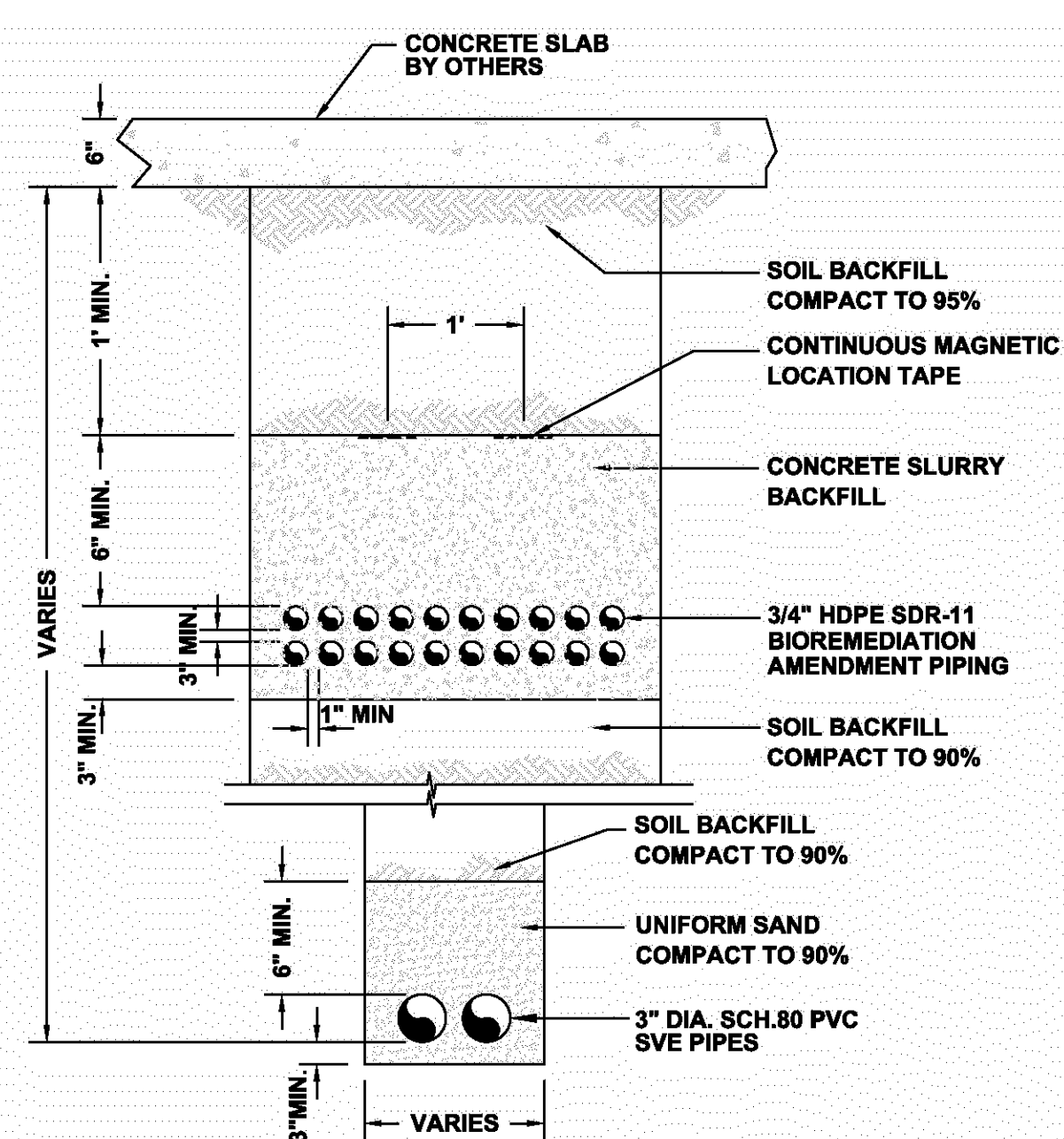
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C-4 PIPING LATERAL TRENCH
NOT TO SCALE



D SOIL VAPOR EXTRACTION
C-4 WELL DETAIL
NOT TO SCALE

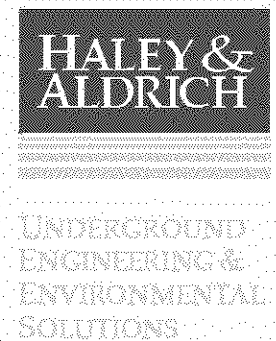


E SOIL VAPOR EXTRACTION PIPING TRENCH
C-4 CROSS-SECTION AT UTILITY LINE
NOT TO SCALE



F SOIL VAPOR EXTRACTION AND
C-4 BIOREMEDIATION PIPING TRENCH
NOT TO SCALE

6	12/8/03	AS-BUILT	GKM
5	6/20/03	APPROVED FOR CONSTRUCTION-REVISION 1	GKM
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ISSUE	DATE	REVISIONS	BY



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ALL DIMENSIONS AND LOCATIONS APPROXIMATE

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

CIVIL DETAILS-SOIL VAPOR
EXTRACTION PIPING

Date: DECEMBER 2003 Scale: NOT TO SCALE File No. 28882D05

Project Engineer:	RMF
Designed By:	TAH
Drawn By:	GKM
Checked By:	TAH
Sheet No.:	10 of 10
Drawing No.	C-4
Issue	6